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**Earth Matters: Religion, Nature, and Science in the Ecologies of
Contemporary America**

by

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ABSTRACT

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Earth Matters examines the relationships between alternative religion in North America and the natural world through the twin lenses of the history of religions and cultural anthropology. Throughout, nature remains a contested ground, defined simultaneously the limits of cultural activity and by an increasing expansion of claims to knowledge by scientific discourses. Less a historical review than a series of fugues of thought, *Earth Matters* engages with figures like the French vitalist, Georges Canguilhem, the American environmentalist, John Muir; the founder of Deep Ecology, Arne Næss; the collaborators on Gaia Theory, James Lovelock and Lynn Margulis; the physicist and New Age scientist, Fritjof Capra; and the Wiccan writer and activist, Starhawk.

These subjects move in spirals throughout the thesis: Canguilhem opens the question of vitalism, the search for a source of being beyond the explanations of the emerging sciences. As rationalism expands its dominance across the scientific landscape, this animating force moves into the natural world, to that protean space between the city and the wild and in the environmental thinkers who initially moved along those boundaries. As the twentieth century moves towards a close, mechanistic thinking simultaneously reaches heights of success previously unimagined and collapses under the

demand for complexity posed by quantum physics, by research in genetic interactions, by the continued elusive relationship of mind to health. This allows the wild to return inside through the internalization of consciousness sparked by the American New Age, but also provides a new model to understand the natural world as complex zone open to a wide variety of strategies, including the multiplicities of understanding offered through contemporary neopaganisms.

Earth Matters argues for the necessity of the notion of ecology, both as an environmental concern but also as an organizing principle for human thought and behavior. Ecologies are by their nature complex and multi-variegated things dependent upon the surprising and unpredictable interaction of radically different organisms, and it is through this model that we are best able to understand not only ourselves but also our communities and our efforts to make sense of the external world.

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Introduction

This grand show is eternal. It is always sunrise somewhere; the dew is never all dried at once; a shower is forever falling; vapor is ever rising. Eternal sunrise, eternal sunset, eternal dawn and gloaming, on sea and continents and islands, each in its turn, as the round earth rolls.

John Muir, *The Philosophy of John Muir in The Wilderness World of John Muir*

Earthrise

We might point to our contemporary society with its growing reinterest in community and in rediscovery of one's roots in the earth, on the one hand, and its fascination with space exploration, on the other.

Jonathan Z. Smith, *The Influence of Symbols on Social Change*

Christmas Eve, 1968. The upper right of the front page of the *New York Times* is dominated by a grainy, blurry photo beneath the headline “APOLLO NEARS MOON ON COURSE, TURNS AROUND TO GO INTO ORBIT; CREW SENDS PICTURES OF EARTH.” (Wilford 1968) Apollo 8 was a mission of firsts: the first entrance into the moon’s gravitational field by humans, the first lunar orbits, the first live transmissions of images from a manned space flight to an international television audience, as well as a host of other accomplishments surpassed by later programs (speed records, distances covered,

and so on). It was also the source of the first images of the earth from space taken by humans.

If there is a point around which the explorations of this thesis are tethered, it is these iconic images of an earth, partially shrouded in shadow, rising into the absolute and inky darkness of space. Apart from their purely aesthetic beauty, they provide a moment symbolic of a much larger series of global transformations. Part of their gravitational attraction is the complexity that lurks in their contemplation—not least from the role gravitational attraction itself plays in their existence. That complexity begins in the act of seeing them as a watershed moment at all: in doing so, I am clearly engaged in creating a fiction: the images that came from Apollo 8 (and future space missions) gained their cultural presence only in the future that unfolds following the actual events of 1968, and only as they participated in the ebb and flow of history.

The caption below the front page photo of that Christmas Eve's *New York Times* reads "Earth, as seen from the Apollo spacecraft during the astronauts' live television broadcast yesterday afternoon. Features on earth are obscured by a heavy cloud cover. The North Pole is at the lower left." This first image is an inverted earth, presented upside-down and off its axis. The *Times* is singularly unimpressed with Apollo's photographic prowess, noting that the earth "looked like a sort of large misshapen basketball," and paying more attention to the lunar craters that would be photographed subsequently during the ten orbits around the moon: "since the moon has no distorting atmosphere and will be only 69 miles or so away, the television pictures were expected to be much sharper and more detailed than the astronauts' earth pictures." Surpassed by later images, these pictures

of the moon—while vital to the planning of the lunar landings—remain consigned to the historical archive. This is the first part of the fiction: the creation of a false history of the moment itself, where what is later received is seen as present from the very beginning: far from being harbingers of a new age in any sense, these initial photographs were largely passed over with little impact.

The second set of fictions is more easily clarified: in what follows, I do not mean to imply a strongly causal relationship in either direction between the earthrise image and the various socio-cultural/religious movements I discuss. Initially coming from NASA, but later both emanating from and being incorporated into numerous sources, from the cover of *The Whole Earth Catalog* to the opening sequence of the 1970s PBS show *The Big Blue Marble*, these images did not cause globalization, although they are clearly entangled in that process in, I would claim, non-spurious, non-accidental ways. The wanderings of John Muir were only in the most loosely metaphorical way related to the romantic notion of exploring outer space, but the quick acceptance by various environmental groups of those images as providing supporting evidence for claims towards the earthly universality of nature firmly draws its roots through Muir's fertile soil.

While the space program itself, with its connections to global competition and its reliance on an ever-expanding industrial complex, was a key cog in the emerging global machine, the lunar missions may also be seen as a final triumph of older knowledge. There is a direct line between Newton's contributions to the blossoming of insights into the physical world and the calculations required in NASA's operations, and the latter may be seen in one sense as the zenith of the former. Clearly Newtonian physics isn't

“disappearing” or becoming less relevant; it has, however, been displaced from its position as the sole descriptor of reality recognized by “rational science.” As such, the images from Apollo 8 offer a useful moment, a historical pivot around which we can see conceptions shift. In short, my claim is that the view from space signifies a movement in cultural locations from the local to the global, from particularism to holism, and that this shift may be traced across many disciplines as a series of upheavals and struggles centered around this relationship.

Cartography

Absurd premises, in excluding nothing, do have the advantage of minimizing the chance of error.

Niklas Luhmann, *Essays on Self-Reference*

Three dominant concepts weave their way through this thesis: vitality, nature, and ecology. I will not be presenting an archeology of these concepts, although they are each well deserving of a own full-length treatment. Instead, I am using each of them, and often their points of intersection, as the vantage points from which I try to make some sense of a series of questions that have emerged as I have spent the better part of a decade working with, through, and around these dominant concepts. In this time, it has become clear to me that I have willfully and joyfully inherited two different modes of interpretation that are ever present in my academic work. What follows intentionally forages along an uneasy border, caught between *history of religions*, the umbrella concept given to the comparative

study of religious phenomenon (a discipline that will be discussed in more detail in chapter two), and *cultural anthropology*, a more philosophically inclined set of analyses rooted (for me) in a mix of postmodernism, feminist theory, and late-twentieth century movements in anthropology. The first two chapters attempt to ground each of these modes of thought in turn.

THIS VITAL LIFE

Chapter one, *This Vital Life*, focuses on the concept of vitalism, using Georges Canguilhem's writings as its primary focus. Philosopher, doctor, and longtime director of the Institut d'histoire des sciences at the Sorbonne, Canguilhem (1904-1995) joins together a sophisticated presentation of vitalism with another core focus of this thesis, science, or more properly, scientific discourse. In a stance not always echoed by proponents of vitalism, Canguilhem always writes with a specific horizon in mind, that of identifying what it means to be alive in a sense that will pass scientific muster. That, to this day, no such definition exists is more a tribute to the complexity of the question than to any underlying accuracy of vitalism itself, which remains more compelling as a metaphysical explanation than a medical one. Even Canguilhem is forced to admit that, in spite of his conviction of there being a truth to vitalist phenomenon, the identification of that truth remains firmly in the province of theory, not experimentally confirmable fact.

This opens up the second doorway: if to the left we find science; to the right, religion. The searchings for meaning about the relationship between the structures through which we understand the world and the world itself that will be examined over the next

five chapters are, when seen through the combination of lenses that reveal the world to me, religious searchings. For the most part, they are not churched, and many of them are cloaked implicitly or explicitly in anti-religious language. To open up this question, we turn in *This Vital Life* briefly, and not for the last time, to both Georges Bataille and Mircea Eliade. Here, I use Bataille and Eliade as warning signs: each of them has a particular understanding of what could be called religious time, and in the material we encounter, questions of temporality, those moments when a discourse seems to separate itself from history and enter some isolated, theoretical zone that exists before all else, will often serve to raise a flag, a symbolic indicator that that we have moved towards, if not into, a zone that is best understood as containing religious behavior.

This provides the first moment where I am able to emphasize that, just because the phenomenon under consideration does not appear to be congruent with notions of traditional religious expression does not mean it is not religious in nature or in form. Perhaps even more importantly, this holds true even when the subjects under consideration themselves would protest loudly against such a category being applied to their behavior or thoughts or writings. In one sense, this is the anthropological turn: your subjects always remains experts on their own experience. That does not make them accurate judges of the same, especially if the question (and here we veer away from the anthropological back towards the history of religions) is comparative in nature. This debate about the relative merits of the emic and the etic, of the insider and the outsider, of the practitioner and the observer, the believer and the critic, is a long-standing debate on both sides of my academic work, and one that is likely never to be satisfactorily resolved. The important

thing, I would claim, is the tension between the two sets of perspectives, a hermeneutics that is in no way original, but that I hope to demonstrate with both integrity and empathy.

This Vital Life returns to the question of contextualizing Canguilhem within a longer view of scientific discourse by turning to both Jean-François Lyotard and Michel Foucault, Lyotard for his help in unpacking what we mean by discourse and Foucault for his more specific work on situating Western knowledge as a practice with a particular form as it moved into and through modernity. This is not at all a steady, stable progression: scientific understanding (and while our focus is often more tightly restricted to medical concerns, we will regularly move back and forth between that specific realm and the structure of science as a whole) must be seen as a three-dimensional shape, a river that flows slower at points and faster at others, that rushes forwards in great leaps only to sit suddenly stagnant until something breaks further upstream, allowing the current to pick up momentum once again. The metaphor as conceived lacks a key component: as both the collaborations between Gilles Deleuze and Félix Guattari, as well as the work of Luce Irigaray, show, scientific progress is not merely the result of a momentum that carries forward arbitrarily. There is, if not control, influence: dams are built, tributaries blocked off, paths of understanding declared forbidden despite the presence of crystal clear water and dependable tides. The question then becomes what it means to swim in those waters: what is contained within the practice of “doing science,” by which I refer more to the cultural practice than specific activities in (for example) a laboratory? Perhaps unsurprising, given my claims above with regard to the particular interpretive lenses through which I perceive the world, it turns out that, especially in its margins, doing

science remains suspiciously similar to doing religion, especially as both move into the late twentieth and early twenty-first century.

Thus grounded, we are able to dive more deeply into vitalism itself, encountering what I see as two forms although, of course, nothing is ever truly isolated, and there are overlaps and blurred zones in any analysis. I dub these “Bodily” and “Worldly” vitalism, and their differentium lies in where the vital force, that which animates us and that which is seen as being essential to life, is ultimately located. Bodily vitalism points to something internal, something contained within each individual, something that for centuries of Christianity was neatly captured in the notion of a soul (and, of course, for centuries of other religious structures in other loosely cognate notions). We are, however, focused both temporally and in terms of the specific manifestations under consideration at a point where such a notion proves unsatisfactory, and are forced to spend some time considering the notion of secularism, both definitionally and in terms of what transformations it may hold for bodily vitalism. This is an important moment: any comparative discussion of contemporary religion must grapple with secularism, and the conclusions drawn from that encounter will dictate much of what follows from that point. If the world is seen as literally less religious—that is, if secularism refers to a disappearance of religious content from the world—much of this thesis (and much of the field of study) is increasingly irrelevant outside of quaint notions of how foolishly we all used to spend our time. If instead secularism refers to a formal transformation, a morphological alteration in cultural behavior where prior classifications into religious and non-religious categories no longer hold true, then what we have to say continues to have meaning, and even potential impact

beyond the ivory walls.

The idea of worldly vitalism provides a bridge to chapter two and beyond. Here, the focus is external, with a belief that there is a substance that exists *out there* of which we partake, and by doing so, remain vibrantly alive. While the specific permutations of this are almost infinite in their variety, the general movement takes us, well, outside and into the natural world. But, what exactly is that? When we wander across the world, what is that we wander in, and how is that space constructed both through our perceptions and our cultural behavior? The palace is clearly unnatural, but what about the wagon track or the planted field? Building largely on Roderick Frazier Nash's work, we are able to draw a distinction between the natural, which only exists at the margins of the culturally created, at the intersection of garden and jungle, settlement and wilderness, and the wild itself.

This Vital Life serves two purposes simultaneously. In terms of content, it introduces several areas that will recur later (science, medicine, time, life); in terms of form, it provides an exemplar of a certain mode of analysis and critique, one that attempts to draw disparate strands of conversation into engagement with each other, one that looks for areas of congruence and overlap, that listens as much to the echo as to the initial roar in trying to unpack meaning and draw conclusions. The chapter ends, appropriately enough, outside, gazing at the spaces marked by cultural settlement—colonialism, even—in contrast to those seen as natural or wild.

RELIGION, NATURAL AND OTHERWISE

The second chapter extends that gaze across the early history of the United States,

drawing extraordinarily heavily upon the magisterial work of Catherine Albanese, who has for decades studied what she first terms “nature religion” and later “American metaphysics.” Her work is critical to this dissertation: without it, what I am doing is not possible. I say that not only in terms of the voluminous nature of her scholarship, but also because her work allows us to move much more quickly and much more flittingly across the landscape she has already mapped: it is no longer necessary to demonstrate that nature religion has existed and has been an important part of almost every significant manifestation of North American religion, on both sides of the colonial encounter.

Religion, Natural and Otherwise opens, however, not with Albanese, but with the tradition in which she was trained and continues to work. The notion of comparative religion is not an easy one, and the field itself remains conflicted about what it means to work within its boundaries. If I am going to examine what “doing science” entails, it seems reasonable to also spend some time looking at what “doing comparative religious studies” might mean. The answer for me is bound up in the aforementioned history of religions, an academic tradition with its roots in the University of Chicago in the first part of the twentieth century and its branches, well, everywhere, including Albanese’s department at the University of California at Santa Barbara. The history of religions is highly problematized as an area of study. Questions of authority loom large, as do issues related to how, and on what basis, objects (behaviors, truth-claims, accounts of experience, cultural products) from dramatically different contexts can be joined together. While the history of religions itself provides some answers, and we look to both its “founding fathers” in Eliade and Joseph Kitagawa as well as to generations of their academic

descendants represented by Wendy Doniger and David Gordon White, these questions seem to me ultimately to be anthropologically based. This leaves us with a point of interaction between perhaps the pre-eminent emic examiner of the field, Jonathan Z. Smith, and Clifford Geertz, whose oft-cited and admittedly slightly dated notion of “thick engagement” offers a path forward through the morass. In the end, for both Smith and Geertz—and for the history of religions as a whole—comparison remains valid and integral; albeit with serious concerns about competency, about integrity, and about the care with which such academic explorations must be undertaken.

With that, we turn more directly to Albanese’s work and especially to 2007’s *A Republic of Mind and Spirit*, which I use in two ways. First, Albanese’s notion of an American metaphysic gives us something to push against, something against which to gain traction in our own understanding of American religion—a question complicated by the very real possibility that, in fact, there is no such thing, that instead there are just American religions in the plural, and that no amount of creative abstraction can provide a common ground amongst them. Indeed, writ large, this is likely the case. However, if—as both I and Albanese do—we limit our scope considerably, patterns and themes do emerge and while my understanding of the religious notions we will examine in more depth in the rest of the thesis differs from Albanese’s, she provides a very nuanced and intriguing starting point. Second, I use her work as a set of exemplars from which I select a few for more detailed focus. So, the aboriginal tribes of the states bordering the North Atlantic; so, Thomas Jefferson staring at the vast expanse of Virginia from atop the Natural Bridge; so, Emerson.

Our discussion of the aboriginal people of North America becomes, very quickly, quite complicated and allows a diversion into the twin notions of authority and authenticity that are core to my understanding of religion. At stake is the question of what actually constitutes an authentic religious tradition—if the term has any meaning at all—and what relevance historical truth has on the matter. The specifics under consideration concern Sam Gill's work with the idea of an Earth Mother or Corn Mother in native American traditions, a concept so endemic to many understandings as to be unquestioned, located within religious traditions that are often almost reflexively assumed to be exemplars of sacred interactions with nature. The difficulty is that the notion of an Earth Mother or any of its close cognates—at least in terms of the commonly held contemporary associations—seems, as far as Gill is able to ascertain, to be incredibly recent, growing quite rapidly from the bare seeds of a small handful of statements, some apocryphal, made within the last two centuries and made, exclusively, as a product of interactions between native and white communities. This is dangerous, threatening scholarship: what does it mean to claim that religious truth is invented? Especially when that truth has been embraced and imbued with meaning by both emic and etic communities? These questions will plague us again in our considerations of Wicca and neopaganism in the fifth chapter, with a very different twist to them.

Religion, Natural and Otherwise also allows me to foreshadow two other ideas that will return: first, Albanese's treatment of the figure of Davy Crockett opens the door to explorations of race and racism in America. I meet these topics at a very specific angle, attempting to extend their role in this story well beyond the brutalities of slavery and the

contributions of Afro-Caribbean practices to the religious melting pot, to pick two highly available tropes among many. Race in America is not the focus of this thesis, but nor can it be—as it is all too often—wholly ignored, allowing North American cultural behavior to collapse into an assumed whiteness. Second, many of the practices we will encounter later, especially as we dive more fully into the New Age itself (whatever, at the end of the day, that may be), include within them a concept of magic and magical practice, and our discussion of both aboriginal religion and the metaphysical traditions that are carried into the New World from the Old offer an opening to consider what these terms mean.

The chapter closes with an extended consideration of Ralph Waldo Emerson, whose *Nature* is taken as a key moment, joining together the concepts under consideration at the end of the first chapter with what has immediately preceded here. Emerson's writing is looked at through the lens of Émile Durkheim, something that, in the end, does the poet few favors: we are left with Emerson having ceded authority away from the natural world and back into culturally constructed domains, having settled for a sense of being “in touch” with nature as sufficing as a proxy for direct and unmediated contact with it.

WALKING THE WORLD

This position would be anathema to John Muir, who serves as the primary subject of the third chapter, *Walking the World*. The nuanced and sophisticated biographical treatment of a single subject is something I admire, but at which I am not skilled. Still, Muir remains deeply compelling and, as such, receives the most in-depth biographical treatment of any of the subjects of this thesis. This seems appropriate not only for his

historical role—part of the founding group of The Sierra Club, a highly recognizable public figure in the early moments of American environmentalism, a prolific and widely-read writer—but also for the ways in which many of the things that interest me most about the questions related to religion and nature in America emerge in his life. Foremost among these is his demand for direct experience, his unfettered exuberance at being in the wild, and his lifelong use of encounters with the natural world as a healing balm. While this can be traced to boyhood romps along the Scottish coast, the key moment instead finds Muir in his early 30s, on the verge of settling into a career somewhere between academia and mechanical engineering, nearly losing his sight in a workshop accident. Convalescing in a darkened room, he has an epiphany and realizes that he cannot bear the thought of never again being able to gaze upon the natural world.

Once able, he decides he will travel to South America to see the Amazon, a journey he begins with a three thousand mile walk, from central Indiana to the Florida panhandle. Three thousand miles—no real provisions, no itinerary, a map, a couple of books. Muir's walk to Florida takes him through much of emerging rural America, but he didn't reach the Brazilian jungles until an around the world voyage much later in his life. At this time, coming out of the woods and swamps of southern Georgia, he contracts malaria, recovers in Florida, and finds his way to northern California, which would serve as his home base for the rest of his life. This is the most outwardly dramatic of several such moments in Muir's life: wracked with guilt over the proper response to the Civil War, he vanishes into the Canadian wilderness; later in life, suffering from a weary depression spawned by over-extending himself in the social and political realms, he voyages to Alaska for several

months, traipsing over the glacier eventually named in his honor.

After arriving in California, Muir would spend many years in the Yosemite valley and the Sierra Nevada mountains and would become a primary figure in two heavily entwined activities. The first was the nascent movement encouraging the government of the United States to form national parks. Depending on how you count, Yosemite was either the second or third, but certainly in the top ten: the formal designation of “national park” took a while to settle, and distinctions between Yosemite, Yellowstone, and the Adirondacks of upstate New York can be made in various ways, depending on who is angling for the top spots on the list. The second was the growing role that geology began to play in our understanding of the world around us. Here, Muir’s contributions were those of the skilled amateur, enhanced by his wide ranging explorations where theories born of his observations of Yosemite were confirmed by what he saw of Alaskan glaciers. In many ways, geology provides a model for various other instances of secularization: what emerged as a series of explanations for that which God hath wrought gradually turned to a vast field of inquiry that provided direct evidence against religiously-based cosmological explanations.

This movement—while clearly relevant to this thesis—was not Muir’s direct concern at all: he had shrugged off the somewhat brutal Protestantism enforced by his father throughout his youth and replaced it with what could be termed a hyper-expansive panentheism, where God’s grandeur is expressed precisely through the majesty of glacial movements, regardless of their impact on a strictly interpreted biblical timeline. Muir’s God was a god of science, and both scientific data and the wonder of direct observation of

his works both big and small, from the mountains to detailed field work on butterflies and birds, trumped any written legacy.

There is a tendency in working with Muir to become slightly untethered: his prose is soaring, often well beyond the point of excess, and his life put him in moments of such severe isolation that, surrounded by the blinking lights and digital hum of the early twenty-first century, he seems to be almost a mythic figure, John of the Woods come to preach the Redwood Gospel. Certainly, that is a large part of how he has been received through the past century or so.

Partially as a counterweight to this, partially as a continuation of the brief discussion of race in America in *Religion, Natural and Otherwise*, and partially as foreshadowing for some of our discussion of Aldo Leopold, I use the encounters on his long walk between Muir and African-Americans, largely poor farmers, as a way to ground his writings. Muir was no more a racist than a huge number of other well-intentioned early-generation European settlers in the United States but also no less, and the effacement of those inheritances marks a blind spot not only in the work of Muir's biographers, but in many of the environmental and New Age movements that draw occasional inspiration from his life and work.

This notion of inheritance proves thorny as we look at Aldo Leopold, whose *Sand County Almanac* is often hailed as an exemplar of early American environmentalism, and the "land ethic" it proposes is probably the most cited initial expression of a truly ecological concern by European descendants on these shores. For the page and a half or so that is usually quoted, this is all quite fine, but it ignores the rest of the text, which presents

an ideological framework that is troubling at the very least. That these things can be ignored is, I argue, a product of their *whiteness*, a cultural attribute that allows them to fade, unnoticed, into the background. This critique becomes clearest through an engagement with Carl Anthony, who provides a wonderfully cogent analysis of the social and human cost of these blind spots in an ecological narrative.

These issues seem to expand theoretically the more I think on them, providing an opportunity to leave the realm of biographical interpretation for an exploration of some of the key surrounding issues. The first is the sheer complexity of the landscape that stretches before us: an ecology is, almost by definition, overwhelming. Ecologies emerge out of the multiplicities of interactions between already significant zones of behavior: they lack internal boundaries, and attempts to simply control them almost always crash upon the reefs of unpredictable outcomes and unexpected results. The challenge to engage with them, in Donna Haraway's words, to "become worldly," is a significant, difficult one and one that is worth attention at both the theoretical and physical level. This is a key moment of disclosure: in my thinking, ecologies exist out there in the natural world, in the marshes and swamps, the mountains and the open plains, but also in the narrative world: the overlapping, changing world of theory may also be seen as an ecology, and when I write of one of these planes, I am also always already writing about and of the other.

The question is how can we cross between these? What is the relationship between the mountain itself and Leopold's call to think like such a thing, even with Anthony's sophisticated critique? What could that possibly *mean*, to think like a mountain? Zones, planes, boundaries, moments of interaction. These are the tropes that lead me towards

Haraway and, immediately, to her prolonged meditation on human/canine interaction, *When Species Meet*. This may seem an odd part of Haraway's corpus to focus on—and we will return in a later chapter to her own considerations of humanity in relation with technology—but her prescient and probing questioning of what it means to reach across a chasm beyond true understanding, what is actually required of us to engage deeply with another species, another way of communicating, seems to speak to the heart of the issue. It also allows an opportunity to push back against some of the excesses of Deleuze and Guattari, who—in an odd sense, like Muir—seem at times to be so caught up in the narrative momentum of their own writing that they end up in unexpected locales with perhaps unintended consequences: Muir, clinging quite comfortably to branches at the top of a pine tree during a massive storm; Deleuze and Guattari insisting that only the exceptional animal is worthy of attention and all others, explicitly including humans who find themselves with domesticated companions, are deserving of mocking scorn and dismissal. Haraway insists otherwise, and while her conclusions remain muffled, her demand for the possibility and her willingness to engage fully with the broad demands of the question remain a guide.

Walking the World closes with the third member of its triumvirate of subjects, Norwegian philosopher and activist Arne Næss, best known for being the originator of what came to be termed *deep ecology*. Næss is joined to Muir in his general engagement with nature (including the notes of isolation and of finding solace through direct experience) and to Leopold in his concern for a land ethic, a concern that Næss is able to formulate with less additional baggage than Leopold's oddly nostalgic masculinity allows.

Less, but not none. Næss is a highly trained and rigorous philosopher, and his notion of *ecosophies* as individual philosophical frameworks that allow for disparate groups to combine their efforts on issues (for him, environmental, but in no way is the application of an ecosophy limited to matters of the environment) remains both useful and wide-ranging. His influence on contemporary ecological movements cannot be underestimated and my assumption is that, with his death in early 2009, we will see more and more academic work devoted to his archives. While the introduction of rigor is a welcome corrective to Muir's more ethereally connected musings, Næss also carries with him a very large helping of anthropocentrism, a tension which continues to plague environmental activism and policy-making.

AS ABOVE, SO BELOW

We leave *Walking the World* having considered half of our equation: in Muir, Leopold, and Næss we find figures deeply engaged in questions of what our relationship is, could be, and should be towards our natural surroundings, considerations that have been enhanced by the contributions of other thinkers as well (Anthony, Haraway, Deleuze and Guattari). The other half requires a return to the notion of science: what is this world of which we speak? This is really only ever a half-turn, of course, as we cannot discuss the earth from the perspective of the earth, but are left with either the all-too-human voices of science on the one hand, or thinkers thinking about science on the other. Chapter four, *As Above, So Below*, traces a voyage from the former to the latter, beginning with James Lovelock and Lynn Margulis' Gaia Theory and ending with Mary Midgley's musings on

the relationship between scientists and science, specifically evolution. In between, we spend quite some time in the company of *complexity*, used both in its usual sense but also referring to a specific mode of analysis developed in the latter third of the twentieth century. The title of the chapter is consciously heavy-handed, not only foreshadowing chapter five's treatment of Wicca and neopaganism, but also reflecting both the voyage from Gaia Theory to Margulis' later work on bacterial lives and the larger sense that this has all happened before, that for all the apocalyptic trappings, the cultural movements we are tracing are all echoes of interactions in the past and hints of what is yet to come.

As Above, So Below opens with a brief biography of James Lovelock with the hope of providing some insight into the iconoclastic career of this self-described "independent scientist." The greatest influence on Lovelock's career was his invention of a small device that came to be known as the *ECD*, or Electron Capture Device. The ECD could fit in the palm of your hand, and could determine—with a level of sensitivity and precision that was deemed physically impossible at first—the presence of various forms of chemicals in the atmosphere. In a turn of events that echoes some of Muir's brushes with prosperity, Lovelock did not become rich off the invention: the rights were ceded to the government of the United States long before the value of the device was apparent. Without the ECD, much of the research that fueled the early environmental research movement would have been delayed at least a decade: it made it possible not only to prove that chemical contaminants were present in the atmosphere, but to track their spread across the globe.

It also formed both the practical relationships and the theoretical leanings that would position Lovelock for his later work. The notion of Gaia grew out of consulting

done with NASA in preparation for the Viking mission to Mars, and here emerges the true zone of overlap between Lovelock's work and other thinkers we have encountered.

Lovelock realized there was no purpose in looking for life on Mars because of the extreme stability, the utter inertness, of its atmosphere. Mars was dead, and we could tell that because entropy had won: nothing was generating change at the chemical level in the Martian "air." This formed an absolute contrast to the earth, where the atmosphere is riotously alive, where a constant state of chemical imbalance exists, an incredibly complex cycle of transformations that seem to never end, flowing into each other in ways only dimly understood. Lovelock realized that the cause of this difference was, ultimately, *life*. Living things, by virtue of their very existence, take in a wide variety of inputs and transform them into an equally wide variety of products. We're not talking about tools but rather chemical compositions: the transformation of oxygen into carbon dioxide, the slow movement of sunlight into waste.

Ultimately, this was the insight from which Gaia Theory—the notion that the earth could be seen as a giant, self-regulating system that preserved a certain set of almost overwhelmingly complex environmental conditions—was born. By now, Margulis had joined Lovelock as an academic partner (each of them make slightly puzzled references to their never being entwined romantically, with a notion that for their friendship and collaboration to survive, their relationship would have to remain platonic), and the two of them began writing about Gaia in the late 1960s and early 1970s, positing that the earth contains a complex network of interrelated, self-regulating systems. This much was relatively uncontroversial although, of course, there was both the predictable resistance to a

new, big idea and, as always, the serious potential for heated dispute in the scientific details. The real question, and the one that made Gaia so unpalatable for the first few decades of its existence, was *why*? The answer seems to be—and here Gaia is finally joined, albeit in a hidden way, to notions of worldly vitalism—in order to preserve the conditions (chemical, bacterial, geological) necessary for a flourishing of life. This is problematic within the world of secular science (that concept, again) for many reasons, most of all because of the dramatic opening it allows for a return of an ultimate being, in this case a Goddess, that has set it all up *just so*.

This interpretation of Gaia is both overly simplistic and the one that dominated its initial reception by the wider public (and continues to be found throughout large swathes of the New Age). The actual claims are much more difficult to grasp, and invoke a much more sophisticated understanding of evolution and complexity itself than is usually found. Evolutionary scientists, led by Richard Dawkins, then at the height of his influence, provided the initial bulwark of the resistance to Gaia, heaping scorn upon it and claiming that Lovelock (and Margulis, but at this point Lovelock was really the “face” of the theory) was operating under a romanticized and naïve understanding of evolution. There is an irony here: in the end, Gaia was accepted not because of its simplicity, but for its comfort with, indeed, its dependence upon, complexity.

To understand complexity better, especially in its more recent theoretical usages, we turn to Fritjof Capra and, through him, to the work of Francisco Varela and Humberto Maturana. There are many possible guides to complexity, and the choice of Capra is quite intentional: *The Tao of Physics* places Capra both as a scientist and a major contributor to

the early American New Age; the controversies surrounding that text problematize both of those positions; and his later writings provide a wonderfully lucid path through often difficult terrain. Capra's work helps us understand what is meant when we speak of interrelated systems, and how we can trace something as seemingly incomprehensible as the evolution of single cells into the human (or canine or feline or bovine) eye back through reproducible, mathematical models. As part of this, several notions that are held dear begin to show signs of tension, most notably through the emergence of a scientific middle ground that sits somewhere between some variant on intelligent design and a cold, lifeless universe, devoid of purpose. But, whose purpose? *Cui bono?*

With that question, Lynn Margulis, heretofore an acknowledged partner in the creation of Gaia, but a figure largely obscured by Lovelock's shadow, steps into the light. Margulis is a hugely influential biologist, a figure whose work on bacteria and its varieties of form and function was largely (although certainly not at all single-handedly) responsible for a total rewrite of biology textbooks across the world. When a twelve year old insists that there are six animal kingdoms, stretching their mouths around terms like "archaebacteria" and "eukaryote," Margulis is partially responsible.

For our purposes, Margulis' greatest contribution (often made in collaboration with her son, Dorion Sagan—her first husband was the astronomer Carl Sagan, to whom we shall turn at the beginning of chapter five) is to batter at our notion of a biological self until we are forced to admit its total defeat. This ties directly into the notion of evolution: if animals cannot be said to be whole selves, what is it that evolves? What is the appropriate unit between the gene (already proven as being far too limited in scope) and the furry

beast? Margulis insists that we are asking the wrong question, and that as long as we remain fixated on ideas that revolve around the individual, the singular, we will never arrive at an acceptable destination. Life—literally—for Margulis (and, I would argue, for Haraway, for Joan Roughgarden who we also meet briefly in this chapter, and for many others) depends on large communities acting together, which is quite distinct from acting in harmony, or acting in a coordinated, mutually beneficial way.

Margulis' professional career (she died in 2011) was one of twin paths of rejection, dogged persistence, and ultimate acceptance, a situation certainly hardened by her being a woman in a scientific field that was (and, many would claim, remains) unused to powerful women advocating major changes to well-established modes of thought. Both her work on Gaia and her bacterial-focused theories of evolution were ridiculed, and yet both are currently accepted, at least in their wider formulations. In both cases, the most virulent resistance came from scientists whose primary domain was evolution itself, regardless of the specifics of their specialties. The question of why the scientists in this field—presumably a domain focused explicitly on the naturalness and ubiquitous nature of change—would be so resistant plagued me until I encountered Mary Midgley's work, which offers a useful way to think through the issues.

Midgley writes in a different key than any of the philosophers we have worked with so far: her sentences are often declarative and efficient, even simple. Her thinking, however, is nuanced and deep, and it is a tribute to her skills as a writer that her work remains so accessible. What Midgley offers are thoughts on the relationship between science and religion that help to clarify what is at stake in these discussions. In doing so,

she is able to clearly highlight just how the boundaries between claims of science and claims of ultimate meaning and purpose are effaced beyond the point of recognition, trodden over in both directions time and time again, usually in service of a larger, ideological project that remains obscured behind appeals to scientific impartiality. Life lurks behind every turn of this chapter: it is life that fuels the chaotic systems of Gaia, life that drives Margulis to her microbial explorations, and life in the end that Midgley posits as being the contemporary replacement for any sort of deity that might lurk behind the systems under examination. She leave us once again in conversation with Canguilhem, but several turns of the spiral further along.

Speaking of spirals ...

PAGANISMS, NEO AND NEW

Paganisms, Neo and New opens by attempting to retrace our steps so far, with a stress on the notion of ecology itself. This is followed by a fairly lengthy engagement with Carl Sagan, who is used as a stand-in for hundreds of scientific books that do odd things with religious content, often in service of discrediting religion entirely. In Sagan's case, we examine *The Demon-Haunted-World: Science As A Candle in the Dark* and, more specifically, Sagan's invoking of two seventeenth century figures, Thomas Ady of England and the German Friedrich Spee, both of whom are recast as arguing against what Sagan sees as the irrational intrusion of faith into matters of scientific law. Sagan is unapologetically looking for allies in his fight against the use of religion as a weapon against humanity—the specifics here are the persecution of suspected witches in Europe.

The difficulty is that both Ady and Spee believe firmly and fervently in witches: they just think the wrong people are being imprisoned, tortured, hung, or burned at the stake. For Ady especially, this is explicitly a matter of theological consideration and import. In his literal reading of the Bible, God has already provided clear instructions on how to identify and punish witches, and if we use any other metric whatsoever, it is an affront to the Holy word and writ. I have no quibble with Sagan: like many of my generation, part of my fascination with the stars stems from the enthusiasm that drove his PBS series *Cosmos*, but I am drawn to the constant overlapping of science and religion, and to the remarkable levels of misunderstanding and misuse that all too often ensues, and Sagan's example allows us to consider the roots of these issues in a bit more depth.

The religious content that interests me most emerges through, out of, and in reaction against that amorphous and ill-understood construct of the New Age. Albanese leaves us with a clear methodology to trace its roots throughout the religious history of post-colonial North America, but its current manifestations aggregate to form far more than a contemporary American metaphysic, combining questions of authenticity, of engagements and complicity with post-capital globalization, and of how to evaluate the value of individual claims of experience within a society whose appetite for increased narcissism seems endless. It is here—in the New Age—that, for my purposes, we encounter the most interesting examples of these contested boundaries between domains of knowledge and domains of faith.

The definition of the New Age is a well-argued subject, and—much like the definition of religion treated earlier—while I try to provide some of the more influential

perspectives, the act of rigorously defining a sphere of understanding has never seemed, for a variety of reasons ranging from the personal to the political to the theoretical, particularly compelling. Still, some consistent themes do emerge, and some of these are quite problematic, most notably the narcissism and the relationship to the engines of marketing and commodification mentioned above. The problem is ultimately unresolvable: the New Age refers to multiplicities, and out of that many there are always movements that are more or less aligned with various positions, more or less easily dismissed on a variety of grounds. That also means that there should be—and I would say there clearly *are*—locations within the New Age that are both aware of the complexity of their own position and are struggling to find a coherent response and consistent path forward.

This may be seen quite clearly in, as a single example, neopaganism's tangled relationship with appropriation and authenticity. Here we find a movement with a voracious appetite, a seeming unending tolerance, for swallowing anything attractive into its belly, a movement whose founding claims are, again and again, proven to be more myth than fact. We also find a movement—or, more accurately, significant sections of a movement—that is acutely aware of these truths, and that is actively engaged with trying to build an ontological space where more than one thing can be true at the same time. Wiccan practitioners can both know that Gerald Gardner essentially invented their religious practice under a century ago *and* feel a deep connection to an image of pre-technological Britain that leads them to insist they are carrying forth an ancient tradition into the digital world, using iPhones to capture century-old rites performed with a mixture of implements uniquely hand-crafted and mass produced in the factories of the Far East.

This is not easy to do, and a deeper engagement with how such tolerance for both/and can be created is worthwhile.

For that, we turn to Starhawk, whose *The Spiral Dance* is, to borrow a term from Olav Hammer (whose impact is explicitly felt multiple times throughout this thesis), a primary “movement text” for neopaganism in the United States. After examining the structure of the religious system Starhawk offers (first as witchcraft, later as Wicca), I attempt to present a sense of Starhawk’s progression, from the romantic notions of the late 1970s through decades spent on the front lines of protest movements against globalization to her attempts to distill those social engagements into methodologies for group performance within more secular cultural spaces. Throughout all of that, she remains, without reservation, a witch, and her struggles to integrate these different components—artifacts from the New Age, an ever-changing sense of what Wicca is and should be, a deep commitment to social justice that leads her into dangerous situations and moments of witnessing great violence, a similar dedication to local activism and to the inevitable organizational instability that accompanies it—into a coherent practice are what draw most of my focus.

The thesis closes with two thoughts, less conclusions than momentary reflections caught on the surface as I look back over the work so far. The first is a claim that nature itself is the secret ingredient added by the New World as the syncretic process unfolded, bringing together strands of early European occult movements, the transformed versions of mystery cults that survived the crossing, the bloodied contributions of Africans forced westwards, and the violently uprooted offerings of the indigenous people of this land. The

natural world—seen differently, seen through a variety of theoretical and practical lenses, but always seen—was added to the mix, shaken and stirred, and poured back out into the increasingly global trade in religious notions that emerged at the end of the nineteenth century and exploded throughout the twentieth.

The second is an insistence on the importance of the notion of ecology as a cultural metaphor. Ecologies of thought, ecologies of action, ecologies of belief: none of these can exist independently, and their interdependence is fractal: no matter at what scale they are examined, ecologies are plural things, compositions of multitudes locked in complex interactions and occasionally springing free in innovative ways. Not only do they offer a corrective to our treasured and destructive notions of individuality and exceptionalism, they have the advantage of, if we are to learn anything from the subjects examined in the five following chapters, being true as well.

Technical Notes

Jazz ... has progressed in its fits and starts of sudden discoveries and startled reactions. New principles, new sounds, new rhythms and harmonies have been advanced with unusual frequency. Not surprisingly, many of the younger musicians have been quietly digesting this information almost as quickly as it has appeared. As a result, they've acquired a degree of musical sophistication which supersedes many of the previous standards of excellence. So it's no longer especially relevant to ask the young saxophone player, for example, to demonstrate his ability by running through all the Charlie Parker licks.

Digable Planets, *Appointment at the Fat Clinic*

There are, as always, a series of clarifications that are required surrounding certain

choices of form within the text. The most immediately obvious to academic readers is probably the absence throughout of footnotes, an intentional choice to enforce a sense that, if something is worth saying, it is worth disclaiming in the body of the work and not in a labyrinthine and covert series of comments. This has several implications: first, there some detours that are probably better suited to the marginalia that remain in the main text, for which I can only ask indulgence; second, I have in general refrained from long lists of citations, preferring to let direct quotations speak more fully. This has an additional effect of creating some very long block quotes. My concern for context and my sensitivity to the potential harm that comes from its loss has led me to err on the side of expansiveness here. I want the authors voices that I bring into conversation to be full and present, not subsumed beneath or into my own. If successful, this will allow an even greater differentiation to emerge between theirs and mine; if unsuccessful, it will give the appearance of relying too heavily on the material of others at the expense of my own incorporative critique.

As part of this I have, as much as possible, left the quotes alone: British spellings remain, as do whatever guiding light was followed in the original regarding capitalization, placement of quotation marks vis-à-vis punctuation, and the like. Any added emphases have been explicitly noted. In my own text, I have strived for consistency, and to land on the side of caution. The temptation to turn everything into a proper noun seems one born of a desire to isolate and elevate, and in a paper fascinated with zones of ecology and overlap, counter-intuitive. Hence, earth is used more than Earth, neopagan is preferred to Neo-Pagan, etc. There are exceptions of course, the largest of which being the term New Age, which I capitalize mostly as an aid to clarification: the confusion entailed by asking the

reader to constantly decipher whether what is intended refers to a generic adjective or a proper noun seemed unfair. Other retentions of capitalization are mostly a product of accepted usage in the communities to which the terms belong (Wiccan instead of wiccan, as an example). When the same citation would be repeated consecutively within a single paragraph, I have only included it once.

Finally, a note on the epigraphical quotes. Not all of the sections have them, but many do, and their purpose is twofold. First, they serve as a way to extend the conversation between the subjects of the thesis itself, allowing me, for example, to place words by Starhawk—who is not dealt with in depth until the final chapter—into the exploration of vitalism with which I open. They also allow a way for the dissertation to break free in a limited way, bringing in various bits of inspiration that have over the past decade felt relevant as moments of insight or interesting commentary on these topics, whether the source qualifies as suitably academic or, in many cases, falls into the nebulous realm of somewhat popular culture.

Giving Thanks

It takes a village.

Apocryphal “African” Proverb

When I first walked into the office of the Department of Religious Studies at Rice University, I was equally parts naïve and lucky. Naïve to the intricacies and seriousness of graduate school, and lucky that, despite that, I was taken seriously enough to be

considered. And rejected. And then, gloriously and after a year's hard effort, accepted. Doubly lucky perhaps in that Rice, chosen because of its geography, proved to be a department that aligned very neatly with my own academic leanings. I thought this would be common, but the more I learned of the academic landscape, the clearer my good fortune became.

There are many people who deeply influenced my work over the past decade who will never read this thesis; still, I am thankful for my interactions with David Cook, Claire Fanger, David Gray, Cathy Gutierrez, Hugh Urban, and Philip Wood. And, one person who I never thought would read the dissertation, but did: my immense thanks to Julia Hardy for her proofreading and encouragement. It was unexpected, and all the more valuable and appreciated for that.

The warmth and generosity of spirit shown by James Faubion were surpassed only (and barely) by his willingness to share his brilliance. At several key points—more than, I am positive, he knows—a discussion proved invaluable in helping me along this path, often revealing a way forward that I had missed entirely. During one of those discussions, my daughter asked him, “Why do you always use such complicated words?” I am thankful he does: much of this world deserves more complexity than it is given.

Jeffrey Kripal has proven to be the most supportive mentor imaginable, from encouraging me to (re)apply to the department all those years ago through gently shepherding me away from several intriguing but ultimately impossible thesis topics to patiently trusting that progress on this manuscript was, indeed, continuing apace. His willingness to invite me into his own work and his innate kindness have been consistent

and dependable, and for that he will always have my gratitude.

My wife was asked by a family member what one says when someone completes a doctoral thesis. Her answer was, “Thank God!” The arc of the last decade, from understanding why I felt the need to go to graduate school to my changing sense of what it means to have done so to the sacrifices made along the way in terms of time and availability have at times caused difficulties for a wide range of people. A few stand out in need of special recognition: David and Judith, for their unflagging commitment to lovingly helping us lead the lives we want; Nancy, for a yeoman’s effort in proofreading an oft-times incomprehensible draft; and, most of all, Marian, for trust, for partnership, for love.

This Vital Life

In the extreme, life is what is capable of error.

(**Michel Foucault**, Introduction to **Georges Canguilhem's** *The Normal and the Pathological*)

All of life is, in a sense, a transformation of energy into form. We are sunlight at a vast costume party, dressing itself up in one form after another, discarding one outfit to pick up a different one.

Starhawk, *The Earth Path*

This opening chapter provides half of the context for what follows, containing both background for several key concepts that are carried throughout this thesis and insight into a certain mode of critique that I both inherit and hope to emulate. Starting with the material most distant from my training may seem strange, but the ideas are such that it seemed best to work from the outside in, if you will, building from more general, anthropological considerations to the more overtly religious.

In its simplest formulation, vitalism refers to the belief that there is a source, usually described in terms of energy, that animates all life. It is the focus on this last term, *life*, that differentiates vitalism from its closest relatives: similar claims are made by monism, animism, pantheism, and even panentheism, but none of them center upon the question of life itself, of what separates the living from the dead, of how we identify the

characteristics that allow us to recognize life as a category of being. The modern usage of the term vitalism—considered as spanning perhaps two centuries—is explicitly post-scientific; that is, it is a reaction to the vacuum left by the retreat of religious answers from similar questions: if the defining mark of life is no longer a soul, what is it? If our spirit is not animated by God’s breath, what provides what we perceive as the underlying spark of consciousness? This framing is explicitly and intentionally Western, but the question is by no means limited by that geopolitical scope; indeed, with the late nineteenth century beginnings of globalization, notions of *chi* and *prana* (among other related categories) found their ways to the exploding populace of North America, offering additional multiplicities of possible answers to the core vitalistic concerns. To introduce a concept and metaphor that will dominate what follows, these Eastern notions (and others from South and Central America, from Africa, from Oceania) found fertile soil on the shores of the New World, and whether directly or through the impact of being “in the air,” added their notional substance, if not their actual presence, to the conversations. Other than the mechanics by which this happened—the voracious appetites of what emerges into the contemporary New Age, the ways in which early movements towards a blossoming globalization enable the process, the challenges these alternate modes of knowledge and authority pose to the rapid rise towards dominance of science itself—the details of these systems, their variants and their inner workings, fall beyond the realm of this thesis.

We are focused on the vitalist tradition that traces its roots to the weakening of the Medieval church, at the moment when the answer to queries about the forces that enable life could be sought beyond the restrictive confines of Catholic theology. Since then the

domain of vitalism has shifted, sometimes being found within the realm of religious explorations (both mainstream and alternative), more recently being seen as a concern of science and scientists, and often being relegated to a set of unquestioned assumptions that lie very close to the heart of our cultural world view. Even with this meandering, once life began to be considered as an entity separate and isolated from God's will, vitalism develops along two paths which will be detailed further below, but bear mentioning at the outset: there is a strain I will call *bodily vitalism*, locating this energy in the physical body itself and becoming most prominent in the historical twin emergence of medicine and biology, as well as in ongoing movements concerning health, diet, and sexuality; alongside this is a tradition I term *worldly vitalism* that turns outward, locating the vital force externally, in the geography and geology of the external world. Here, what nourishes our beings, what provides us with the substance of our lives is something present in the natural world, eventually (especially in recent history) culminating in its being located in the biosphere itself.

Having created a definitional duality, it is necessary to immediately destroy any sense of inflexible permanence: even if the categories are accepted, they are my invention and the vitalist tradition certainly doesn't see itself as participating in an oppositional binary. Worldly and bodily vitalism must be conceived as points on a spectrum where individual movements and practices may move freely back and forth, often combining elements both at will and unconsciously. This last point is actually key, I would claim, to understanding the phenomenon in totality, as the final question we will take up concerns what links the bodily to the worldly; that is, what mechanisms are offered either to

internalize the vital presence available in the external world, or to project outwards the energy that lies dormant inside of each of us.

There is an immediate tension between thinking about vitalism and thinking about philosophy in general, a tension that grows out of more than a desire to resist certain forms of intellectual temptation. Georges Canguilhem (1904-1995), who will serve as our primary voice for vitalism in what follows, sums this up nicely in a passage worth keeping in mind for the entirety of the chapter.

Philosophy can succeed in its intention—to recover the unity of effort behind disparate acts of spontaneous creation—only by relating the various elements of culture and civilization: science, ethics, religion, technology, fine arts. To establish such relations is to choose among values. Criticism and hierarchy are therefore essential. Philosophy cannot adopt anything but a critical attitude toward various human functions that it proposes to judge. Its goal is to discover the meaning of those functions by determining how they fit together, by restoring the unity of consciousness. The business of philosophy is therefore not so much to solve problems as to create them. In Léon Brunschvicg's words, philosophy is the "science of solved problems," that is, the questioning of received solutions. Now we can understand why philosophy has attracted hostile reactions through the ages: philosophy is a questioning of life and therefore a threat to the idea that everything necessary to life is already in our possession. The goal of philosophy is to search for reasons to live by seeking the end for which life is supposed to be the means. But to pursue such a goal is also to discover reasons not to live. Nothing is more at odds with life than the idea that an end to life may be a value not simply an accident. Therein lies one source of philosophy's unpopularity. (Canguilhem 1994, 384)

Beginnings, and Beginnings

Spinoza does not write about the beauty of wild nature. Perhaps he never talked about it. Not about the coastline of the Netherlands, the storms, the variety of light and darkness, the seabirds. There were people around him, Dutch landscape painters, who appreciated all this. Maybe he did also, but it scarcely influenced what he says in the Ethics. What he says about animals does not suggest he had any wide or deep sense of identification with any of them. Nevertheless, his kind of philosophy of life, its structure, is such that he inspires many supporters of the deep ecology movement.

Arne Næss, *Spinoza and the Deep Ecology Movement*

A history of ideas is not enough to explain human behavior.

Paul Shepard, *Nature and Madness*

We are, of course, joining a story already in progress at a completely arbitrary point. We could start tracing the history of vitalism with the rise of worldly mysticism in the west and figures like St. Francis of Assisi (1181-1226), or we could start with the early separations from the church, with either of the formidable figures of Baruch Spinoza (1632-1677) or Gottfried Leibniz (1646-1716). The temptation to neatly align Spinoza and Leibniz with the two forms of vitalism, with Spinoza's nature providing the original inspiration for worldly vitalism and Leibniz' monadic explorations allowing for the development of a tie between vitalism and the body itself, should be noted. There are two reasons for not doing so: first, it would take us too far afield and delay our examination of the more contemporary areas of focus that will follow; secondly, and perhaps more importantly, such a simple division of the work of these two thinkers would inevitably prove unsatisfactory: both Spinoza and Leibniz deserve better.

Canguilhem—probably the most important theorist of vitalism of the last century,

especially as regards its relationship with medicine and biology—notes that there is something about vitalism itself that historically insists on its own reaching back to a prior moment.

Vitalism's fecundity appears at first glance to be all the more contestable in that ... it always presents itself as a return to antiquity. The vitalism of the Renaissance is a return to Plato against an overly rationalized Aristotle. The vitalism of Jan Baptist van Helmont, Georg Ernst Stahl, and Paul-Joseph Barthez is, as has been said, a return, beyond Descartes, to the Aristotle of *De anima*. ... But what is the meaning of this return to antiquity? Is it a revalorization of concepts that are chronologically older and consequently more worn out, or a nostalgia for intuitions ontologically more original and closer to their object? ... Was Aristotle's vitalism not already a reaction against Democritus's mechanism, as Plato's finalism in the *Phaedo* was a reaction against Anaxagoras's mechanism? It is certain, in any case, that the vitalist's eye seeks a certain naïve version of things, a pretechnological and prelogical vision, a vision of life anterior to tools and language, that is, to instruments created by man to extend and consolidate life. (Canguilhem 2008, 66–67)

I want to pay special attention to the very end of this passage, where Canguilhem speaks of vitalism as requiring a conception of life somehow separated from current reality, a space created not only outside of time, but also outside of history, lacking tools, lacking the engagement between the human and the creations of humanity. This structure is a flag, an indicator that, in addition to whatever else vitalism may entail, there is something *religious* going on here. This is not to say that vitalism is itself a religion, or that Canguilhem is consciously making religious claims; rather, it is explicitly taking the position that vitalist claims can (and, I would say, should) be read as disclosing a religious dimension, and that reading this way—which also implies reading them in conjunction with and against other religious texts and practices—allows the history of vitalism to be seen more clearly.

In this case, it also echoes a specific religious theory so strongly as to warrant a slight digression concerning a thinker to whom we will return later in this chapter, Georges

Bataille (1897-1962). In *Theory of Religion*, Bataille opens with his famous description of early humanity as being “*in the world like water in water*,” (Bataille 1992, 19) that is, dwelling in an undifferentiated environment where no separation between subject and object is possible. Irrevocable change is brought to the situation through technology in the form of the first tools.

The positing of the object, which is not given in animality, is in the human use of tools; that is, if the tools as middle terms are adapted to the intended result—if their users perfect them. Insofar as the tools are developed with their end in view, consciousness posits them as objects, as interruptions in the indistinct continuity. The developed tool is the nascent form of the non-I. (Bataille 1992, 27)

A tool—a chipped adz, a digging stick, a pouch sewn from the carcass of last week’s feast—is, for Bataille, an object that forces us to confront the independent components of reality and which leaves trailing behind in its wake the question of what, exactly, were we perceiving before?

With the positing of a thing, an object, a tool, an implement, or of a domain of objects (where the various coequals of the subject itself assume an objective value), the world in which men move about is still, in a fundamental way, a continuity from the subject’s point of view. But the unreal world of sovereign spirit or gods establishes reality, which it is not, as its contrary. The reality of a profane world, of a world of things and bodies, is established opposite a holy and mythical world. (Bataille 1992, 37)

This division of the world provides the basis for Bataille’s later analysis, which carries on into *The Accursed Share*. If accepted, it also opens almost irresistibly into a sense of longing as the primary characteristic of the relationship between our mundane and profane quotidian world and the “other,” regardless of how that alternative space is conceived.

This brings a structural condition of vitalism into clearer focus, namely that in its stronger forms, vitalism requires a return, a recapturing of a former state where we and/or

the world itself were, if not perfected, closer to an ideal state. Importantly, at the present moment we also contain the possibility of that return, the potential of recapturing that original moment and, of course, we are possessed by something far stronger than simple nostalgia in our motivation to do so. Bataille's presence here is clear, but so is that of Mircea Eliade and especially his notion of *illud tempus*. Longing may be seen as a religious act when the desired object is removed from its historical context and placed in a separate space, when it is no longer part of "the time constituted by the sum total of profane personal and intrapersonal events," but is instead moved into what Eliade calls "primordial time, which is always the same, which belongs to eternity." (Eliade 1959, 88)

We will return to Eliade several times in this thesis; as such, a single disclaimer should suffice: the ongoing critiques—some might term them "witch hunts"—of Eliade notwithstanding, his eye for patterns in religious behavior remains important to this day. Making use of what he saw does *not* imply agreement with him across the board, and most importantly, is done with full recognition that the patterns recognized by Eliade remain merely *a* set of patterns available for recognition: they neither define nor delimit the possibilities of religious expression. That said, Eliade continues to offer a standard for comparative work when examining how patterns of religious expression relate to each other. "Eliade has shown us the patterns and systems of these interrelationships (and thus differs, despite superficial similarities, from older catalogs of 'objects' such as *The Golden Bough*). It is for us, his students, only to bring forth the questions, blurrings, and shadows which result from our more peripheral vision." (Smith 1978, 90)

Throughout the history of vitalist thought a single theme dominates: nearly all

claims regarding vitalism have as a primary concern the question of health, despite a variety of constructions of that term itself. For our purposes, the specific meanings of health, illness, and healing may change dramatically, without altering the underlying assumptions: whether health is seen primarily as an issue of internally balancing various forces; or if health is seen as a state of relative completeness from which we may depart through our behaviors and our beliefs; or if health is seen as a state of “good working order,” where occasional repairs—some minor, some major—are required as part of an ongoing maintenance program, the underlying organization (the humors themselves, or the soul, or whatever construct is posited as uniting the machine) is often ascribed to a form of vital energy. This has demanded a strong interaction between vitalism and the discourses of medicine, interactions which are highly complex, as they always occur over contested terrain. If there are competing claims regarding how to be healthy, there will be constant pressure—at least from the point of view of the claimants—to establish a superiority for one over the other (the perspective of the sick is often far more open to simultaneously engaging in competing, and even contradictory, remedies). As Fuller notes, “healing is a profoundly cultural activity,” (Fuller 1989, 5) one which engages many different components of the social milieu, and one that may never be reduced to a simple narrative of correction or cure. As such, before considering vitalism proper in some depth, a short detour to consider the role of science, and specifically the rise of allopathic medical practice, is in order.

Science and Science's Discourse

What constantly reaffirms the opposition of science to all religion and, at the same time, happily makes the unification of science impossible is the substitution of reference for all transcendence. It is the functional correspondence of the paradigm with a system of reference that, by determining an exclusively scientific way in which the figure must be constructed, seen, and read through functions, prohibits any infinite religious utilization of the figure.

Gilles Deleuze and **Félix Guattari**, *What Is Philosophy?*

Science remains an important genre of Western exploration and travel literature.

Donna Haraway, *Simians, Cyborgs, and Women*

The first turn in this detour is to address the relationship between religion and science at a very general level, identifying two dominant modes of thought that inform what will follow. The groundwork is laid out quite nicely by Gary Ferngren in his introduction to *Science & Religion: A Historical Introduction*, one of dozens and dozens of compilations that examine this issue. He writes:

Andrew Dickson White's *A History of the Warfare of Science with Theology in Christendom* (1896) was published more than a century ago. In it White argued that Christian theologians had a long history of opposing scientific progress in the interest of dogmatic theology. The charge was not new. It grew, in fact, out of the view of the eighteenth-century philosophes that the charge was an institution whose ignorance and intolerance had hindered human progress, while science was a force of cultural liberation. An argument similar to that of White had been made by John William Draper in his *History of the Conflict between Religion and Science* (1874), and it struck a responsive chord in American thought, which was at the turn of the century adopting an increasing secular outlook as it came to recognize the central role that science played in modern society. The Draper-White thesis, as it has come to be known, was enormously influential. For the past century it has been the predominant view of the relationship of science and religion among scientists and laymen alike. It wedded a triumphalist view of science with a patronizing view of religion. Popular misconceptions doubtless underlay the

widespread presumption that religion was opposed to science. Grounded in faith, religion seemed bound to suffer when confronted by science, which was, of course, based on fact. (Ferngren 2002, ix)

The contrapuntal melody to this argument, that science and religion are fully unified, is of course the opposite face of the same discourse, one based on a binary relationship between two isolated spheres. A third position focuses on that isolation, claiming that science and religion occupy essentially “separate but equal” footing, their focuses aimed at different planes of inquiry (a weakened form of this argument results in a “God of the Gaps,” where religion is only authoritative on the ever-reducing ground that science can not—*yet*, scream the scientists—adequately explain). This last position has been most recently popularized by Stephen Jay Gould’s discussion of the acrimonious interactions

between science and religion. No such conflict should exist because each subject has a legitimate magisterium, or domain of teaching authority—and these magisteria do not overlap (the principle that I would like to designate as NOMA, or “nonoverlapping magisteria”). The net of science covers the empirical realm: what is the universe made of (fact) and why does it work this way (theory). The net of religion extends over questions of moral meaning and value. These two magisteria do not overlap, nor do they encompass all inquiry (consider, for starters, the magisterium of art and the meaning of beauty). To cite the usual clichés, we get the age of rocks, and religion retains the rock of ages; we study how the heavens go, and they determine how to go to heaven. (Gould 2003, 195)

Gould’s argument can be—and was—attacked from many sides (and it held enough attention that he dedicated an entire volume, 1999’s *Rocks of Ages: Science and Religion in the Fullness of Life* to its defense), but it is fairly representative of the attempts to forge a “separate but equal” type of solution.

In a volume cut of the same cloth as Ferngren’s, Paul Kurtz’s introduction to *Science and Religion: Are They Compatible?* provides a strong example of the classic formulations of these ideas:

Historically, to question sacred doctrine was to shake the foundations of the social order. Thus religions have persisted because they were indoctrinated by custom and habit, sustained by law and rooted in faith and feeling; unexamined, they were simply assumed to be true, and defended as encompassing Absolute Truth and Virtue. Blasphemy and iconoclasm, even religions dissent, during the long history of humankind were considered to be both sinful and subversive and were punishable by excommunication, ostracism, or death. In theocratic societies, the power of secular rulers is invoked to enforce religious dominance.

There is a profound difference between science and religion in this conception of truth. Science requires an open mind, free inquiry, critical thinking, the willingness to question assumptions, and peer review. The test of a theory or hypothesis is independent (at least one would hope) of bias, prejudice, faith, or tradition; and it is justified by the evidence, logical consistency, and mathematical coherence. Science claims to be universal (though postmodern critics deny this), transcending specific cultures and replicable in any and every laboratory in the world. Although religions claim to be universal, they have split into contending factions concerning hegemony: they rely on the acceptance of faith in specific revelations and their interpretations by differing prophets, priests, ministers, rabbis, monks, or mullahs. (Kurtz 2003, 13)

Above all, however, note the parenthetical remarks in the second paragraph. These all-too-typical formulations ignore the possibility of boundaries, the potential of the areas of intersection and overlap: either science is true and religion is false, or they both are the same, or they both are totally and entirely distinct. This would, especially as the twentieth century wore on, prove an inadequate framework for a world that more and more struggled to comprehend the meaning of contemporary science (both literally in terms of the mathematics and theoretical knowledge required and more generally in terms of the burgeoning knowledge of the cost—to the environment, in terms of human life, to the global economy—science bears along with its discoveries).

But each of these examples trend in the same direction: they are written from the assumed solidity of a scientific perspective, gazing outwards towards the humanities. The intellectual traffic, however, moves both ways: just limiting ourselves to the body of modern French thought, we find, from Saussure and Lacan's vaguely mathematical

diagrams to Baudrillard's and Deleuze's invocations of modern physics and systems theories to Kristeva's essay on set theory and Irigaray's work on fluid versus solid state mechanics, a very strong tendency for writers to look to modern science as a discursive resource for their work. From one side, the occasional uproar about this phenomenon seems nothing more than the manifestation of what anthropologist David Hess, building on the work in sociology of Thomas Gieryn, terms "boundary-work," that is "efforts to distinguish one discursive domain, such as science, from competitors, such as religion."

Hess goes on to write that he does not see

the boundary between the scientific and the nonscientific to be a monolithic one, nor ... [that] science can be defined on purely intellectual grounds by a philosophical argument based on abstract demarcation criteria. Instead, ... [he interprets] the boundary culturally as scientists and nonscientists construct it in specific contexts ... In practice the boundary between science and nonscience is recursive, multiple, and changing. (Hess 1993, 17)

This is, of course, a discursive definition and as such one that is likely to be rejected out of hand by much of the scientific orthodoxy, who subscribe *precisely* to the idea of science being recognized through its inherent difference—its "demarcation criteria"—from other fields. They will point to "verification" or "falsification" as the marks of science, insisting that these characteristics are not discursive, but rather somehow "real" and intrinsic to admittance to the discipline. Both of these claims—which undergird respectively much of nineteenth and twentieth century science—aid in the creation of limits to the plane within which the discipline functions, providing "a horizon of consensus to be brought to the debate," (Lyotard 1984, 24) and, implicitly if not explicitly, likewise excluding from that horizon assertions that fail to meet this burden of proof.

Lyotard sees this notion of proof as itself problematic, essentially because it

attempts to forge an unacknowledged identity between a model and its reality. “Not: I can prove something because reality is the way I say it is. But: as long as I can produce proof, it is permissible to think that reality is the way I say it is.” (Lyotard 1984, 24) This creates both the freedom and the restraint of the sciences: “the knowledge that has accumulated in the form of already accepted statements can always be challenged. But conversely, any new statement that contradicts a previously approved statement ... can be accepted as valid only if it refutes the previous statement by producing arguments and proofs.” (Lyotard 1984, 25) These observations occur in the context of an examination of the “rules” of scientific discourse, a process that leads to the conclusion that “it is therefore impossible to judge the existence or validity of narrative knowledge on the basis of scientific knowledge and vice versa: the relevant criteria are different.” (Lyotard 1984, 26)

Zeroing in on the crux of the issue with regards to the interface between science and the humanities, Lyotard notes that theorists in the humanities—that is, those aligned in his dichotomy with narrative knowledge—look upon this difficulty in comprehending scientific discourse with “a certain tolerance,” approaching it

primarily as a variant in the family of narrative cultures. The opposite is not true. The scientist questions the validity of narrative statements and concludes that they are never subject to argumentation or proof. He classifies them as belonging to a different mentality: savage, primitive, underdeveloped, backward, alienated, composed of opinions, customs, authority, prejudice, ignorance, ideology. Narratives are fables, myths, legends, fit only for women and children. At best, attempts are made to throw some rays of light into this obscurantism, to civilize, educate, develop. (Lyotard 1984, 27)

The boundary under contention here is that of acceptability, and, at least to Lyotard’s analysis, it is an unequal division, where while not necessarily being subsumed under it, scientific discourse is seen from the narrative perspective as merely another morphological

type; while from its own side of the divide, it is seen as a defining template, a requirement for admission. “But what never fails to come and come again, with every new theory, new hypothesis, new statement, or new observation, is the question of legitimacy. For it is not philosophy that asks this question of science, but science that asks it of itself.” (Lyotard 1984, 54) I would claim that this concept of legitimacy requires a refinement in Hess’ observation: boundary-work and gatekeeping are related, but not identical activities, and the issue of legitimacy implies that, at the very least, discursive boundaries of any nature are destined to be porous, not rigid, and that language itself—even the hallowed language of formal mathematics—is subject to analysis along the axes of interpretation, symbolic formation, constructed meaning.

Not for the last time, we have gotten far ahead of ourselves, finding ourselves gazing at science in the twenty-first century before examining just how we arrived at that particular precipice. Even as we retreat, though, we will struggle against the pull of the present, moving perhaps far too quickly from antiquity into the nineteenth century before returning to the twenty-first. Even if we are able to keep the general form of the interactions between religion and science in mind, this pattern of movement will invariably weaken some of our groundwork; however it will allow us to more deeply explore the specific bindings between modern notions of vitalism and modern science. These interactions emerge with the ascent of science, specifically medical science, and by starting there we may obtain the clearest view of vitalism’s recent history. This places our discursive beginning immediately after an almost incomprehensible explosion of medical knowledge in the west:

in a quarter of a century, from 1790 to 1815, medical discourse changed more profoundly than since the seventeenth century, probably than since the Middle Ages, and perhaps even since Greek medicine: a change that revealed new objects (organic lesions, deep sites, tissular alterations, ways and forms of inter-organic diffusion, anatomo-clinical signs and correlations), techniques of observation, of detection of the pathological site, recording; a new perceptual grid, and on almost entirely new descriptive vocabulary; new sets of concepts and nosographical distributions (century-old, sometimes age-old categories such as fever or constitution disappeared, and diseases that are perhaps as old as the world—like tuberculosis—were at last isolated and named). (Foucault 1972, 170)

Importantly, our journey will take us from this beginning—when everything seemed possible beneath the expanding canopy of an increasingly dominant tree of knowledge—to a state that Giddens, with typical understated density, summarizes as one where “science has lost a good deal of the aura of authority it once had.” (Beck, Giddens, and Lash 1994, 87) Giddens’ claim that “two world wars, the invention of horrifically destructive weaponry, the global ecological crisis, and other developments in the present century, might cool the ardour of even the most optimistic advocates of progress through untrammelled scientific enquiry” (Beck, Giddens, and Lash 1994, 88) may hold true for some segments of society, the continued strength of what we may term scientism (a concept to which we will return in later chapters) suggests that an earlier observation of his may, in fact, be more powerful in aiding our analysis of the present. He writes

Living in a world of multiple authorities, a circumstance sometimes mistakenly referred to as postmodernity, is very consequential ... For since there are no super-experts to turn to, risk calculation has to include the risk of which experts are consulted, or whose authority is to be taken as binding. The debate over global warming is one among an indefinite range of examples that could be quoted. The very skepticism that is the driving force of expert knowledge might lead, in some contexts, or among some groups, to a disenchantment with all experts; this is one of the lines of tension between expertise and tradition (also habit and compulsion). (Beck, Giddens, and Lash 1994, 87)

The applicability of his observation to the nightly cable parade of talking heads with highlighted titles next to the corporate logo beneath their faces cannot be overstated.

The entire effort requires some care as we are mixing what to some are seen as separate and conceptually isolated discourses: science on the one hand and a theoretical exploration of vitalism falling somewhere between philosophy and cultural history on the other. This is largely due to a slippage of language: I am not interested, strictly speaking, in science itself, instead, it is scientific discourse that is under consideration here. The most common conflation of these two occurs in defense of science, where the object of science—an ever-increasing understanding of phenomena resulting from objective, historically immutable truths—is proffered as a defense against any possible critique of its role in and impact upon lived history. This itself is a discursive move, one related more to politics and the creation of cultural hegemonies than the exploration of knowledge, but it also brings into stark relief a tendency that stretches across most genealogical explorations which Michel Foucault in *The Archaeology of Knowledge* calls the “law of coherence.” This rule exists at the formation of the discourse itself, guiding and shaping it, defining “the terminal unities that complete the analysis.” Speaking in general terms of this law, Foucault writes:

The history of ideas usually credits the discourse that it analyses with coherence. If it happens to notice an irregularity in the use of words, several incompatible propositions, a set of meanings that do not adjust to one another, concepts that cannot be systematized together, then it regards it as its duty to find, at a deeper level, a principle of cohesion that organizes the discourse and restores to it its hidden unity. This law of coherence is a heuristic rule, a procedural obligation, almost a moral constraint of research: not to multiply contradictions uselessly, not to be taken in by small differences; not to give too much weight to changes, disavowals, returns to the past, and polemics; not to suppose that men’s discourse is perpetually undermined from within by the contradiction of their desires, the influences that they have been subjected to, or the conditions in which they live; but to admit that if they speak, and if they speak among themselves, it is rather to overcome these contradictions and to find the point from which they will be able to be mastered. (Foucault 1972, 149)

Foucault's positioning here is quite intentional, even ironic, as the various conditions of discursive formation are later seen as requiring "archaeological work," which is by its very nature quite comfortable with the discontinuous, the ruptured, the diverse:

the horizon of archaeology, therefore, is not *a* science, *a* rationality, *a* mentality, *a* culture; it is a tangle of interpositivities whose limits and points of intersection cannot be fixed in a single operation. Archaeology is a comparative analysis that is not intended to reduce the diversity of discourses ... Archaeological comparison does not have a unifying, but a diversifying effect. (Foucault 1972, 159–160)

I would suggest that this tendency grows stronger as the discourse under consideration considers itself more "scientific," a problematic and inconsistent appellation to be sure, but one whose common usage should suffice at this point. There is an important distinction to make here, however: in one sense, the history of science is, by its very nature, a history of ruptures and discontinuities: it is a history of new "truths" emerging that supplant, extend, invalidate, or reverse existing "truths." How, then, can the law of coherence obtain? There are two responses that merit our attention. First, the law of coherence is clearly in effect when specific narrative threads of the history of science are examined: as a single example, the importance attributed to Robert Hooke in the history of microscopic observation should suffice, where, as Canguilhem notes,

too much credit is generally given to Robert Hooke. True, he discovered the thing, a bit by chance and a bit by playful curiosity, amused by the microscope's first revelations. ... It was also he who, under the influence of an image, invented the word *cell*, comparing the plant object to a honeycomb—the work of an animal—and the honeycomb to a human creation—a cell is a small room. Still, Hooke's discovery did not initiate anything—it was not a point of departure. The word itself was lost and would be found only a century later. (Canguilhem 2008, 30)

Indeed, other scientists—notably Marcello Malpighi and Nehemiah Grew—would in the interim independently repeat Hooke's discovery, using different language and metaphorical structures for their observations. Here, it is the law of coherence which takes

the word “cell,” and reaches back across a century to Hooke’s work, creating an inference of relation between the two, and placing Hooke at (or, at least, towards) the beginning of the lists of certain scientific lineages. Hooke’s “cell” is a discursive unit more than a technical one, a phoneme in the grammar of the history of biology.

Science, Truth, Time

In the case of the physical sciences, we already know that Enlightenment ideas have been much too naïve and dramatic. They suggested that physics could expect to reveal a far simpler kind of order in the world than has turned out to be available. Of course this simplification played a great part in making possible the astonishing success of the physical sciences. It gave western civilisation an understanding of natural “mechanisms” (as we still call them) far beyond that of any other culture, and a wealth of technology that other cultures have never dreamed of. And it is right to celebrate this tremendous achievement. But we, the heirs of this great intellectual empire, don’t actually need to come together simply to praise it.

We don’t now need to tell each other that science is good any more than we need to say that freedom is good or democracy is good. As ideals, those things are established in our society. But when particular ideals are established and are supposed to be working, we have to deal with the institutions that are invented to express them.

Mary Midgley, *The Myths We Live By*

The second response opens our explorations to the larger important issue of the relationship between science and “truth.” While we will later encounter at length the impact of quantum physics and notions of probability and uncertainty, my concern here is on a less traveled examination of the notion of truth and fact within scientific discourse. I would claim that it is truth itself that becomes the organizing discursive object of science;

that is, truth—seen as rational, objective, even eternal— (and, perhaps more importantly, the assumption that “doing science” is equivalent to its pursuit) provides the coherence necessary for the discourse to organize and extend itself through history. Importantly, if “the true—the goal of scientific research—is exempt from historical transformation, then is the history of science anything more than a museum of errors of human reason?”

(Canguilhem 2008, 26) As Canguilhem shows through examples ranging from his discussion of Hooke and the development of cell theory to various moments in medical research to the history of optics, the history of science encompasses more than just its results, which “can never be anything more than a chronicle. The history of science concerns an axiological activity, the search for truth.” (Canguilhem 1994, 30) This activity is confounding, largely because of the uncertainty of the interdependence between factual data and the theoretical frameworks required for its interpretation:

It is easy to be ironic about the importance attached to concepts, but more difficult to understand why, without concepts, there is no science. The history of science is interested in, say, the history of instruments or of academies only insofar as they are related, in both their uses and their intentions, to theories. Descartes needed David Ferrier to grind optical glass, but it was he who provided the theory of the curves to be obtained by grinding. (Canguilhem 1994, 30)

The focus is, then, not on the accuracy or truth of science—those are the domain of the scientists themselves, and areas where I am woefully inadequately qualified to comment. Instead, it is on the history of science, the discourse of science, the way both science talks about itself and, more centrally, the way science is talked about by individuals and groups outside of its well monitored boundaries. These two responses—one at the level of an individual life, an individual discovery, and the other at the meta-discursive level of “truth itself”—mirror to some degree Canguilhem’s distinction between

the microscopic and macroscopic scales in the history of science. Summarizing these, Foucault reminds us that “events and their consequences are not arranged in the same way” between these two, “thus a discovery, the development of a method, the achievements, and the failures, of a particular scientist, do not have the same incidence, and cannot be described in the same way at both levels; on each of the two levels, a different history is being written.” (Foucault 1972, 5) I would add, both as disclosure and preface, that this work is complicated by my essential sympathy towards the scientific projects under examination: that is, it is relatively common (and, indeed, pervasive in much of the material that comprises my “data”) to take either a negative, skeptical position towards science or a naïve, unquestioning acceptance of it. My goal is to do neither, but that goal implicitly accepts that, regardless of how distant from current practice it may be, the underlying desire to discover, to understand, and to do so “scientifically,” whatever that may mean in the end, is a worthwhile effort. That said, Luce Irigaray’s questions loom large:

How does one talk with scientists? Moreover, with scientists from different disciplines? Each constituting a world, and every system of each one of these worlds striving to be global at any given point in time. At any moment, then, each one of these worlds is organized in a totalized way, closed off. How can one reopen these universes so that they may encounter each other, talk with each other? In what language? According to what mode of discourse? (Irigaray 1985a, 73)

This may be clarified by again turning to Foucault, who claims in *The Order of Things* that the history of science, to the degree it looks beyond “the progress of discovery, the formulation of problems, and the clash of controversy” focuses on what he terms “the processes and products of the scientific consciousness.” In doing so, it also ventures into the hidden spaces of the unconscious of science: “the implicit philosophies that were

subjacent to it, the unformulated thematic, the unseen obstacles.” However, this unconscious is usually formulated as a negative, a lack, something that reveals a weakness in the scientific enterprise. While much of this work will range far afield of what can be strictly termed *scientific*, to the degree that it does focus on those activities and, to the degree I am able to, I would attempt to follow Foucault in hoping “to reveal a *positive unconscious* of knowledge, a level that eludes the consciousness of the scientist and yet is part of scientific discourse, instead of disrupting its validity and seeking to diminish its scientific nature.” (Foucault 1970, xi)

If we accept this bifurcation between the object of science and its discourse, we clear a space to explore the relationships between science, power, and discursive operation in a little more depth, explorations that should serve us well as we move from this theoretical beginning through the exemplar materials presented in further chapters. As part of this, and in support of Canguilhem’s constant efforts to reveal the more complex and conflicted parts of scientific development, I will use the initial section of Irigaray’s essay, *The “Mechanics” of Fluid* as a starting point. While Irigaray’s primary concern centers around psychoanalysis and the issue of vision (arguing—as much of *This Sex Which Is Not One* does—against Lacan), she opens with a discussion of cultural metaphor and the strategies of power, and how these behaviors echo across disciplines in potentially illuminating ways.

In the first footnote to the piece, Irigaray notes that “the reader is advised to consult some texts on solid and fluid mechanics,” an intriguing request: clearly, “consulting some texts” would be woefully inadequate preparation for even a brilliant reader to become

skilled at the concepts (let alone the higher level mathematics) involved in both of these fields. It would, however, suffice to familiarize oneself with the particular developments of the fields, one that begins with Newtonian mechanics, which quickly develops a hidden underside, a silent zone. From the very beginning, the flow of fluids—most commonly, the phenomenon of flowing water—were a confounding issue for physicists and physics itself, one that was not ignored, but rather put off, a delay creating what Irigaray terms “a historical ‘inattention’ to fluids.” (Irigaray 1985a, 107) Questions of the interactions of solids—objects on inclined planes, gears, weights and pulleys, even the basic mechanics of flight—were answerable: you formed the query, found the equations, plugged in your numbers, and got a result that was verifiable through experimentation. (In saying this, of course, I am ignoring the fact that these answers and experiments quite often produced answers that were incorrect, but were also either within an acceptable range of error or incorrect only beyond the range of human perception. The most obvious example of this is the inadequate accounting for friction in most Newtonian models of objects moving in the physical world.) However, while Newtonian equations could be constructed for complex phenomenon like the behavior of fluids in states of turbulence or gas under pressure, they were initially virtually impossible to actually *solve*. We turn to another figure who will recur in later chapters, Fritjof Capra:

Exact solutions were restricted to a few simple and regular phenomena, while the complexity of vast areas of nature seemed to elude all mechanistic modeling. For example, the relative motion of two bodies under the force of gravity could be calculated precisely; that of three bodies was already too difficult for an exact solution; and when it came to gases with millions of particles, the situation seemed hopeless. (Capra 1996, 121)

The solution to this difficulty was a long sequence of strategies designed to approximate,

always conducted with the belief that solving such issues was merely a function of increased intellectual power, of better technology, of more horsepower. None of this is meant to impugn those developments, or to somehow imply they are “false,” although, as we shall see, the exact nature of their “truth” is precisely what is being discussed. Still, it is vital to remember—as many of the critics seem not to—that there is no attempt in the discussion of science by philosophy to somehow discredit or cast dispersion upon Maxwell’s insight into using statistical averages to determine the properties of gases, or of differential equations in general (which are, after all, just a way of producing approximations to an accepted level). These advances of knowledge are not judged as being somehow “bad” in themselves; at the same time, however, neither are they pure, residing in some pristine realm that exists in isolation from the cultural structures and historical moments from which they emerge.

A very short detour into her larger project on gender may help, as Irigaray sees much that echoes between her observations about women in general and her assessment of scientific discourse. Most importantly, there is a pattern of a recognized reality exceeding the possibilities of current understanding, responded to by the creation of a representation, a stand-in, an approximation of that reality from which truth can be modeled, with the eventual result that the original reality is totally elided in favor of the representation itself. The key issue in physics was the ultimate nonlinearity of the behavior of complex systems, that is, their refusal to obey the predictions of traditional Newtonian models.

Whenever nonlinear equations appeared, they were immediately “linearized”—in other words, replaced by linear approximations. Thus instead of describing the phenomena in their full complexity, the equations of classical science deal with *small* oscillations, *shallow* waves, *small* changes of temperature, and so forth. ...

[T]his habit became so ingrained that many equations were linearized *while they were being setup*, so that the science textbooks did not even include the full nonlinear versions. Consequently most scientists and engineers came to believe that virtually all natural phenomenon could be described by linear equations. (Capra 1996, 122)

Compare this to Irigaray:

Considerations *of* pure mathematics have precluded the analysis of fluids except in terms of laminated planes, solenoid movements (of a current privileging the relation to an axis), spring-points, well-points, whirlwind-points, which have only an approximate relation to reality. Leaving some *remainder*. Up to *infinity*: the center of these “movements” corresponding to zero supposed in them an infinite speed, which is *physically unacceptable*. Certainly these “theoretical” fluids have enabled the technical—also mathematical—form of analysis to progress, while losing a certain relationship to *the reality of bodies in the process*.

What consequences does this have for “science” and psychoanalytic practice? (Irigaray 1985a, 109)

There are two streams, if you will, in this argument. The first is purely metaphorical, and uses the tropes of fluidity to build a sense of the fleeting and elusive identity of women. Women speak in the “paralytic undersides” of the phallic economy, filling the hidden spaces; women are “continuous, compressible, dilatable, viscous, conductible, diffusible, ... resistant to the countable;” women also share a tendency to interact with other women—other fluids—in ways that “sometimes dilute ... [themselves] in them in an almost homogeneous manner, which makes the distinction between the one and the other problematical.” (Irigaray 1985a, 111) This is clearly familiar ground for readers of Irigaray, and may be read as (yet) an(other) echo of patriarchy in the cultural fabric. However, her overall argument is *not* simply metaphorical; instead—and this is the second stream—it is about discursive construction, about the ease with which representations are conflated with their object, and about what may be created in the blind spot cast by the shadow of the representation itself. There are two dimensions to this

second argument, one specific to the engagement with science, the other reflective of a larger issue within Western philosophy in the twentieth century.

Let $X = X$

*He said: Isn't it / Isn't it just / Isn't it just like a woman?
She said: It's hard / It's just hard / It's just kind of hard to say.*

He said: Isn't it / Isn't it just / Isn't it just like a woman?

She said: It goes / That's the way it goes / It goes that way.

He said: Isn't it / Isn't it just like a woman?

*She said: It takes / It takes one / It takes one t(w)o / It takes one to know
one.*

He said: Isn't it just like a woman?

She said: She said it / She said it to k(no)w / She said it to no one.

Laurie Anderson, *The It Tango*

The factors introduced in abstract analysis should not, as is usually done, be identified with objects in the world. They do not belong to the content of the world we are genuinely part of. Abstract structures are structures of the world, not in the world.

Arne Næss, *The World of Concrete Contents*

Science, for Irigaray—and also for Deleuze and Guattari—is dependent as a discourse on the concept of the variable operating as a type of decoupled signifier, referring neither to an identifiable object in the actual world nor directly to other variables or variable groupings. Variables are

symbols or letters that can be substituted for *proper nouns* referring only to an object within theory. Therefore no reference to any actual person or object, or any person or object in reality. The scientist enters into a universe of fiction which is incomprehensible to all those who do not participate in it. (Irigaray 1985b, 79)

The variable becomes the essential creative act that structures the discursive universe of

science, providing stillness and stability in the face of the task of describing the external world. It is this reduction in speed that is distinctive for Deleuze and Guattari:

The scientist brings back from the chaos *variables* that have become independent by slowing down, that is to say, by the elimination of whatever other variabilities are liable to interfere, so that the variables that are retained enter into determinable relations in a function: they are no longer links of properties in things, but finite coordinates on a secant plane of reference that go from local probabilities to a global cosmology. (Deleuze and Guattari 1994, 202)

Unsurprising given the authors, this requires some unpacking before we proceed, first *chaos* here is a total, simultaneous realm of possibility. “It is a void that is not a nothingness but a *virtual*, containing all possible particles and drawing out all possible forms, which spring up only to disappear immediately, without consistency or reference, without consequence. Chaos is an infinite speed of birth and disappearance.” (Deleuze and Guattari 1994, 118) It is the well from which any object of thought is drawn—indeed, *What Is Philosophy?* is a summary of sorts of Chaos’ offspring: “chaos has three daughters, depending on the plane that cuts through it: these are the *Chaoids*—art, science, and philosophy—as forms of thought or creation.” (Deleuze and Guattari 1994, 208) Each mode of thought interacts with chaos differently, attuned to different operations of manifesting elements from the chaotic sea onto planes of existence. Variables—the singularities that science extracts from chaos—are used in the construction of functions and propositions, and it is from this that the discourse of science is made possible. “It is the idea of the function which enables the sciences to reflect and communicate. Science does not need philosophy for these tasks.” (Deleuze and Guattari 1994, 117)

Notice that for both Irigaray and Deleuze and Guattari, the result of the variable is the creation of a plane of discourse that is separated from any specific referent—either to

people and bodies (Irigaray's concern) or to concepts and planes of thought (Deleuze and Guattari's). This is what creates the chasm between the discourses described by Lyotard above (I would suggest that proofs themselves may be seen, *pace* Deleuze and Guattari, as variables in motion across a plane, but they remain subject to the limits of the scientific) yet its impact runs even deeper. The cordoning off of scientific discourse through this structure of representation serves to create two islands, one of data, research, and experiments, and the other of the scientific observer, with both being constructed as if they were independent and objective entities. The former is required to have no intrinsic relationship to the world as it is experienced by the multitude: the classic experiment in quantum physics begins, "so you have an atom in a box," a situation that is possible only in the laboratory or as a thought experiment; the latter is reinforced through the discursive demands of "the voice from nowhere," which enforces the same structure of scientific practice onto scientific discourse. This voice is possible because science—long before and without the aid of postmodern theories or deconstruction—has already removed the subject itself from the realm of its discourse: it is not the scientist that speaks,

rather, facts speak for themselves. These mute entities are thus capable of speaking, writing, signifying within the artificial chamber of the laboratory or inside the even more rarefied chamber of the vacuum pump. Little groups of gentlemen take testimony from natural forces, and they testify to each other that they are not betraying but translating the silent behaviour of objects. (Latour 1993, 29)

Latour here is perhaps overly snide, but the point stands: scientific discourse is caught between the knowledge that "in themselves, facts are mute; natural forces are brute mechanisms," and the insistence that "scientists are scrupulous representatives of the facts. Who is speaking when they speak? The facts themselves, beyond all question." (Latour

1993, 28–9) For Irigaray, this isolationism is the source of anxiety, of her inability to envision a discourse that reaches across to her audience: “If I were to meet each and every one of you, individually, it seems as though I would find a way to say *you, I, we*. But here, in the name of science?” (Irigaray 1985b, 75)

This issue goes to the heart of Western philosophy in the twentieth century, and is summarized by Irigaray by the recognition that

every scientific universe seems to have its own world view, its stakes, its protocols of experimentation, its technology, its syntax: isolated, cut-off from the others. From what point of view, then, can one *span* these different horizons, seeking out their meeting grounds, workable intersections, possible cross-overs. *By what right can one assume a stance outside?* How does one arrive at it? (Irigaray 1985b, 73)

If anything can be concluded from the arc of Western thought over the previous century, it is that subjectivity itself is quite elusive, let alone objectivity. In the end, there is no place to stand which is not always already embroiled in questions of identity and reference and engaged in the process of life itself. Science may indeed, as Deleuze and Guattari claim, aim at freezing a slice of chaos, but *scientists* cannot be likewise isolated and slowed down. The issue, of course, is that this is a complicated and technical line of thought within the philosophical tradition, and reaching even a limited point of understanding of just how desperate our machinations of clinging to the illusion of an objective existence remain takes time, the study of difficult texts, and the unraveling of often tangled and convoluted reasoning. This is where the formal language of philosophy approaches the same difficulty as higher mathematics, where the appearance of a closed language game interrupts what appears to be an opening for communication.

These waters become muddied even further by the fact that there are actually three

separate arguments—one concerning philosophy, one quantum physics (or, better, the narrative of quantum physics), and one anthropology—that often get conflated or, worse, spliced into each other, creating neither apple nor pear tree in the process, but some inedible hybrid that often looks appealing but is empty of content. We have made reference already to the philosophical dismissal of the objective view, a cursory treatment that must suffice in this context. The quantum narrative turns to the revelation that the observer impacts the system, and claims in the name of Heisenberg or Schrödinger that science has in fact confirmed the philosophic point of view. This is, however, an overly simplistic understanding of the quantum phenomenon, and illustrates the dangers of moving too quickly between discursive schemes. The impact of the observer at the quantum level is precisely an “atom in a box” scenario: Schrödinger never had an actual cat. Instead, the quantum narrative is too often being used to make an anthropological argument about the impact on the participant system of any observer. The difference between the quantum and the anthropological positions is nicely summarized (although with their usual obliqueness) by Deleuze and Guattari:

As a general rule, the observer is neither inadequate nor subjective: even in quantum physics, Heisenberg’s demon does not express the impossibility of measuring both the speed and the position of a particle on the grounds of a subjective interference of the measure with the measured, but it measures exactly an objective state of affairs that leaves the respective position of two of its particles outside of the field of its actualization, the number of independent variables being reduced and the values of the coordinates having the same probability. Subjectivist interpretations of thermodynamics, relativity, and quantum physics manifest the same inadequacies. (Deleuze and Guattari 1994, 129–30)

In something that would be a surprise to many of their critics in the scientific establishment, Deleuze and Guattari are arguing here *against* the sloppy assimilation of the scientific argument into the anthropological: they understand fully that Heisenberg is *not*

referring to the “interference of the measure with the measured,” and insist that other attempts at “subjectivist” readings of science remain equally problematic. Their terminology is revealing: the problem is the attempt to introject a subject into science, which has neither space nor the capacity to accommodate it. At the same time, though, the attraction of the parallelism remains, and the temptation to confuse parallel arguments (both do in fact concern the relationship between the observer and the observed system) with equivalencies (where they are made to somehow reveal that those relationships are alike) must be resisted.

The arguments are seductive because this parallelism is exactly what is of interest to the philosopher:

What the philosopher brings back from the chaos are *variations* that are still infinite but that have become inseparable on the absolute surfaces or in the absolute volumes that lay out a secant plane of immanence: these are not associations of distinct ideas, but reconnections through a zone of indistinction in a concept. (Deleuze and Guattari 1994, 202)

Whereas science extracts individualities from the chaos, philosophy discovers patterns that emerge from territories partially obscured from each other by folds in the landscape of the plane. This topology refuses the possibility of parallelism: instead, philosophy sees the promise of intersection and convergence, of variations that would indicate a commonality, another zone to be explored and elucidated. This quite admittedly highly theoretical conceptualization has very practical implications as it offers an elucidation of the different purposes of the two fields; in this view, they remain

inseparable but independent, each complete in itself: it is like the envelopes of two very different planes. Philosophy can speak of science only by allusion, and science can speak of philosophy only as of a cloud. If the two lines are inseparable it is in their respective sufficiency, and philosophical concepts act no more in the

constitution of scientific functions than do functions in the constitution of concepts. It is in their full maturity, and not in the process of their constitution, that concepts and functions necessarily intersect, each being created only by their specific means—a plane, elements, and agents in each case. That is why it is always unfortunate when scientists do philosophy without really philosophical means or when philosophers do science without real scientific means. (Deleuze and Guattari 1994, 161)

Since they are philosophers—and not scientists—Deleuze and Guattari’s writing is always subject to the charge of being biased towards that field; however note again their insistence on the equality of the two realms at the level of structural construction, and the recognition of the inevitability of their separate development. Indeed, Deleuze and Guattari seem to be hinting here that science and philosophy can only communicate in hindsight, after their creative processes have matured and after the planes have stabilized.

On the one hand, this seems practically and intuitively correct, especially with regards to technology—seen here as the historical manifestation of certain types of science—which can only be evaluated in its application and distribution strategies (the classic example is the splitting of an atom, the knowledge of which must be separated in evaluation from its application; the current example looming on our horizon is nanotechnology, with its promise of eternal youth through the regeneration of “perfect, new” organs and its apocalyptic threat of voracious nano-machines running amok, consuming everything on the planet). On the other hand this would seem to invalidate the exact questions that Irigaray wishes science to confront when she asks

If I were to tell you that two ovaries can engender a new living being, would this discovery seem possible, probable, or true? Would it merely be a genetic fact? Or would it also be considered social, economic, cultural, political? Would it be considered part of the exact sciences? ... Would this type of discovery be promoted, even by those who extend credit? Would it be disseminated by the media? (Irigaray 1985b, 76)

Irigaray here is gesturing back towards the issues raised by Hess at the start of the essay, and reminding us that, once we look beyond the isolation of the laboratory, boundaries are never as easy to identify as we might hope, and the two islands described above emerge as connected to the surrounding land as the tides recede. One could say that Irigaray's questions are only possible if posed from a (hypothetically) mature science, and therefore they accord fully with Deleuze and Guattari's position above, but Irigaray's emphasis on process, on communication, and on the politics of the development of discourse would always remain uncomfortable with such a situation. Indeed, the demand of completeness, of maturity, of a vantage point allowing the retrospective perception of a singular object would be seen, I would claim, as merely another turn of the current discursive structure, one where science still "strives to stand *before* the world: naming it, legislating it, reducing it to axioms." (Irigaray 1985b, 83) This is, of course, the exact structure Irigaray has devoted her scholarship to exposing and rejecting, and opposed (she proposes the term *subjacent* in one of the essays under consideration here, which offers a more nuanced view than mere opposition) to which she offers throughout her work concepts extended from a deep belief in the possibility of another way forward, another way of communicating and being which she subsumes under the rubric of *parler femme*. In language that nicely contrasts with Deleuze and Guattari, she writes

Woman never speaks the same way. What she emits is flowing, fluctuating. *Blurring*. And she is not listened to, unless proper meaning (meaning of the proper) is lost. Whence the resistances to that voice that overflows the "subject." Which the "subject" then congeals, freezes, in its categories until it paralyzes the voice in its flow. (Irigaray 1985a, 112)

If Deleuze and Guattari are correct in their analysis of scientific discourse—especially with

regards to the freezing and slowing of variables—then Irigaray is necessarily correct in wondering if science can hold a space for women’s voices, and, if so, what the impact of such a verbal irruption might be. She is, in the end, unable to answer this question for the “hard” sciences (a distinction that merits attention in and of itself), although the questions she raises for the theoretical wings of biology, physics, and mathematics are all reasonable avenues of inquiry. (Irigaray 1985b, 81–2) More importantly, Irigaray reminds us of the vital necessity of maintaining awareness of the connections between science and politics, not just in the manifestations of science, the byproducts and commodities and their global impact, but also in its structure and its patterns of coherence. In this, there is an implicit movement in her analysis towards holism, even if its definition can never be fully articulated: this movement, I would claim, resonates with the increased attention paid by contemporary science to systems thinking, not in its “organizational management” incarnation, but rather in its inheritance from the initial work in cybernetics of the mathematical basis for working with complexity, with organic systems that exist within vast and complex self-regulating and self-correcting environments.

These developments highlight a weakness in Deleuze and Guattari’s overall model, where science is bound inextricable with linearity, with Newtonian equations and differential calculus; indeed, it is the clarity and depth of their recognition of the structures of linearity that lend force to their analysis. However, they are largely silent on the emergence over the last century of non-linear scientific models and, indeed, it is here that they themselves stumble in an attempt to convert scientific language to narrative argument. Deleuze and Guattari do recognize that

one of the most important aspects of modern mathematical physics appears in the action of “strange” or chaotic attractors: two neighboring trajectories in a determinate system of coordinates do not remain so and diverge in an exponential manner before coming together through operations of stretching and folding that are repeated and intersect with chaos. (Deleuze and Guattari 1994, 206)

There are some issues with understanding their presentation of strange attractors. It’s not clear how to interpret “exponential manner;” more importantly, the stretching and folding involved here is a mathematical process by which a pattern of transformations is repeated recursively, something that must exist outside of chaos itself and not “intersect” with it as it is the components—functions, their elements (which Deleuze and Guattari designate as *functives*), variables—that make up the formal mathematical operation that were originally extracted from the waters of chaos and brought back into the scientific plane. Still, the real fault is in what follows where this mathematical model is held to reveal science’s “profound attraction to chaos,” and an argument is made regarding the interrelationship of science, art, and opinion.

Given their warning above about “subjectivist” readings, it is unfortunate to see the conflation of the formal and the metaphorical usage of “strange attractors” in their conclusion, especially since the science based on chaos theory (which is profoundly and formally distinct from Chaos as Deleuze and Guattari use it) is representative of what is generally seen as a profound transformation across scientific disciplines, one that Lyotard terms (quite problematically, to be blunt) “Postmodern science,” and where

the continuous differentiable function is losing its preeminence as a paradigm of knowledge and prediction Postmodern science—by concerning itself with such things as undecidables, the limits of precise control, conflicts characterized by incomplete information, “*fracta*,” catastrophes, and pragmatic paradoxes—is theorizing its own evolution as discontinuous, catastrophic, nonrectifiable, and paradoxical. It is changing the meaning of the word *knowledge*, while expressing how such a change can take place. It is producing not the known, but the unknown.

And it suggests a model of legitimation that has nothing to do with maximized performance, but has as its basis difference understood as paralogy. (Lyotard 1984, 60)

This is not *parler femme*, but the tropes are at least more similar here: we have multiplicity, uncertainty, fluidity, and a comfort with not-knowing as the basis for scientific progress. These directions are new, and while it is unfair—and unwise—to demand too much from them in their infancy (and here Deleuze and Guattari’s insight about the need for science to reach maturity before interaction with philosophy is possible resurfaces), there does seem to be the potential to reach, in Lyotard’s terms again, a science that can be the foundation for “a politics that would respect both the desire for justice and the desire for the unknown.” (Lyotard 1984, 67)

Another issue emerges here, one that hearkens back to the earlier discussion of Eliade: there is something quite odd about the relationship between science and time. Lyotard—whose analysis of the interactions between scientific and other forms of knowledge (which he denotes as *narrative*) at the level of a language-game lurks in the shadows of much of this analysis as well—points towards this when he writes that “the game of science thus implies a diachronic temporality, that is, a memory and a project. The current sender of a scientific statement is supposed to be acquainted with previous statements concerning its referent (bibliography) and only proposes a new statement on the subject if it differs from the previous ones.” (Lyotard 1984, 26) The scientific object itself remains outside of time, outside of history; yet scientific discourse—and, more importantly—scientific *happenings* occur as very much part and parcel of a historical moment, often providing part of the determinative impulse that shapes the political and

social milieu. In simpler and starker terms, the “truth” of nuclear fission exists at a remove from the history of atomic warfare.

There is more here than the creation of a perfect temporal interval, more than the earlier discussed longing towards Eliade’s *illud tempus*. In a passage worth considering in depth, Canguilhem writes

When a scientific proposition is judged to be true, it takes on a retroactive validity. It ceases to be part of the endless stream of forgotten dreams, discarded projects, failed procedures and erroneous conclusions—things, in short, for which someone must shoulder the responsibility. The elimination of the false by the true—that is, the verified—appears, once it is accomplished, to be the quasi-mechanical effect of ineluctable, impersonal necessity. Importing such norms of judgment into the historical domain is, therefore, an inevitable source of misunderstanding. The retroactive effect of the truth influences even one’s assessment of the respective contributions of various investigators to a scientific discovery (an assessment that only a specialist is competent to make), because the tendency is to see the history of a subject in the light of today’s truth, which is easily confused with eternal truth. But if truth is eternal, if it never changes, then there is no history: the historical content of science is reduced to zero. . . . Over time, a research laboratory’s library tends to divide into two parts: a museum and a working reference library. The museum section contains books whose pages one turns as one might examine a flint ax, whereas the reference section contains books that one explores in minute detail. (Canguilhem 1994, 41–42)

We have, then, two sorts of times: historical time, in which our lives unfold, engaged with innumerable other historical processes, and a scientific time, the time that tracks the irregular revelation of truth, following “a different timetable in each discipline; the chronology of verification has its own viscosity, incompatible with ordinary history.”

(Canguilhem 1994, 30) This second time is discontinuous, ruptured, irregular: it speeds up and slows down and doubles back on itself in reaction to periods of intense activity and slow hibernation. A single event—say Mendeleev’s particular formulation of the periodic table—can lead to an accelerated pace in one field; another—say the gradual unraveling of the tangled roots of the theory of heredity—can, through its emergence, wipe away entire

generations of prior knowledge, supplanting them with a newly current authority. This is where we return to the realm of discursive activity, as this instability of object also leads to an instability of theory. “The history of science is therefore always in flux. It must correct itself constantly.” (Canguilhem 1994, 31)

Doing Science

What I would like to do, however, is to reveal a positive unconscious of knowledge: a level that eludes the consciousness of the scientist and yet is part of scientific discourse, instead of disputing its validity and seeking to diminish its scientific nature.

Michel Foucault, *The Order of Things*

Note that the scientists themselves do not exist outside of this practice: the very act of “doing science” requires an integration into a network of social and historical milieus, each of which have their own particular impact upon the practitioner. While Canguilhem sees this from what might be termed a “hard position,” insisting that as the common technology used for scientific work grows more and more specialized and standardized, “it is true to say that science shapes scientists just as much as scientists shape science;” (Canguilhem 1994, 107) more recent writers have, perhaps in an attempt to soften the resistance from within the scientific community to such notions, written about “styles of thought.” As summarized by Nikolas Rose,

a style of thought is a particular way of thinking, seeing, and practicing. It involves formulating statements that are only possible and intelligible within that way of thinking. Elements—terms, concepts, assertions, references, relations—are organized into configurations of a certain form that count as arguments and

explanations. Phenomena are classified and sorted according to criteria of significance. Certain things are designated as evidence and gathered and used in certain ways. Subjects are chosen and recruited. Model systems are imagined and assembled. Machines are invented and later commodified to make measures and inscriptions such as graphs, charts, and tables. All this is linked up within complex practical arrangements such as experiments and clinical trials. A style of thought also involves membership of a “thought community” in a discipline or subdiscipline, and an intimate knowledge of its relations of power and status. And, of course, a style of thought in an area of science also embodies a way of identifying difficulties, questioning arguments, identifying explanatory failures—a mode of criticism, of error seeking and error correction. (Rose 2007, 12)

Rose here is extending earlier work; for example, speaking of an archaeology of sexuality specifically, but of discursive practice generally, Foucault writes:

Such an archaeology would show, if it succeeded in its task, how the prohibitions, exclusions, limitations, values, freedoms, and transgressions of sexuality, all its manifestations, verbal or otherwise, are linked to a particular discursive practice. It would reveal, not of course as the ultimate truth of sexuality, but as one of the dimensions in accordance with which one can describe it, a certain ‘way of speaking’; and one would show how this way of speaking is invested not in scientific discourses, but in a system of prohibitions and values. An analysis that would be carried out not in the direction of the episteme, but in that of what we might call the ethical. (Foucault 1972, 193)

These styles of thought mirror Canguilhem’s comments on the malleability of scientific discourse, changing themselves in a reflexive response to alterations in their content, in their truth and their relationship to that truth.

The brain, for the contemporary sciences of the brain, is not what it was in the 1950s; the cell, in cellular biology, is not what it was in the 1960s; “the gene”—if it still makes sense to call it that—is not what it was before genomes were sequenced, and so on. The new style of thought that has taken shape in the life sciences has so modified each of its objects that they appear in a new way, with new properties, and new relations and distinctions with other objects. (Rose 2007, 12)

Importantly, this observation does not require any reduction of science: rather, it notes that there *are* interactions between science and larger cultural systems and that the sites of these interactions are often highly contested. Importantly, the nature of these

contests and both their zones of focus and their intensity vary historically: “if we accept that science’s potential conflict with religion varies according to the nature of the religion concerned then it could well be the case that science is less likely to come into conflict with some of the religious systems prevailing in the cultic milieu than with the prevailing religious orthodoxy.” (Campbell 1972, 22) Campbell’s use of the term *cultic milieu* is jarring, but it reflects the context of his historical moment more than anything else:

Campbell defines the cultic milieu as

the cultural underground of society. Much broader, deeper and historically based than the contemporary movement known as *the* underground, it includes all deviant belief systems and their associated practices. Unorthodox science, alien and heretical religion, deviant medicine, all comprise elements of such an underground. In addition, it includes the collectivities, institutions, individuals, and media of communication associated with these beliefs. Substantively, it includes the worlds of the occult and the magical, of spiritualism and psychic phenomena, of mysticism and new thought, of alien intelligences and lost civilizations, of faith healing and nature cure. This heterogeneous assortment of cultural items can be regarded despite its apparent diversity as constituting a single unity—the entity of the cultic milieu. (Campbell 1972, 14)

Campbell is referring, in broad strokes, to the counterculture of the 1960s and early 1970s, but his work has been applied to the New Age (which is generally seen as a movement as only in its infancy at this time) and his definition hints at what emerges in the work of David Hess cited earlier, which provides a useful set of observations as we proceed.

While Hess’ work focuses explicitly and specifically on what he calls *paraculture*, comprised of a set of actors engaged in activities related to the paranormal, spanning the continuum between “true believers,” those engaged in open-ended research, or the sometimes rabid debunkers of such phenomena. Hess’ recognition of the shared complicity between all of these groups in the creation, maintenance, and constant shifting of a cultural

space is quite applicable to our studies, especially at those moments where we will focus on the reception of either a scientific idea in the wider culture, or on the impact of wider cultural movements on contemporary science. The key observation is that these things do not exist independently, but rather inform and shape each other, creating a mutually negotiated cultural space where the boundaries between what are often seen as exclusive communities (for Hess, described at the largest level as the scientific and the non-scientific) are in fact “recursive, multiple, and changing.” (Hess 1993, 17) Hess’ focus on the twentieth century New Age also prepares us well for the later chapters of this thesis, where the problematic definition of that term will be explored in more depth. At this juncture, what is important about Hess is his structural outlook, how he offers a perspective that spans what are often seen as irreconcilable differences. As part of this, Hess views “the New Age movement ... not as an irrational reaction to rationalization, but an attempt to build an alternative rationality in a world perceived to consist of irrational and unjust orthodoxies,” (Hess 1993, 14) This allows him to engage with individuals and theoretical concerns within both the scientific and the paranormal communities with a focus on how they are engaged in the same project of exposing the “truth” of the natural world, even if their methods and conclusions differ radically. Indeed, it may in the end be this commonality of effort that explains some of the vitriol with which these enmeshed communities treat each other, as there is often a highly contested object—science itself—caught between them (this would, for example, account for the energy behind accusations of “good” versus “bad” science). Moreover, by complicating and problematizing their relationships, Hess’ work helps deepen the understanding offered by Campbell on how

science fails to become a simple arbiter of truth.

The demonstrable superiority of science is in many cases just not demonstrable or in other cases only demonstrable to other scientists. ... there is no guarantee that even those people who are impressed by the demonstrable superiority of science and as a consequence desire to hold a scientific outlook will in fact be in a position to distinguish between what are orthodox and what are heterodox scientific views. They may, as a consequence, end up believing in flying saucers and ESP because of the convincing scientific “evidence.” (Campbell 1972, 23)

Campbell’s simple binary relationship is challenged and complicated by Hess’ revealing that there are (at least) three potentially overlapping communities engaged in the shifting boundary-work described above: the believers, the parapsychologists (loosely, those engaged in removing the extraneous, false claims of certain believers in order to reveal the underlying truth, or, at least, the possibility of such a truth), and the skeptics (whose primary concern is to disprove the claims of the believers, often from an *a priori* set of assumptions about the nature of reality). Instead of simple opposition, these groups interact in an endless variety of ways, attacking or supporting each other, forming alliances, rejecting each others’ work, etc. As a single example, the work at Duke University by J.B. and Louisa Rhine in the middle of the twentieth century, which focused on the existence of various forms of what they termed parapsychology (largely varieties of telepathy), remains of critical importance to all three communities: the question is “what to make” of Rhine’s work. It is this process of “making” that will recur in our later discussions of the relationship between science and various forms of vitalism, and we will again revisit Hess’ tripartite model at that time. We are at this point able to look more closely at vitalism itself, beginning with the linked questions of what it means to be alive and what it means to be human.

The Living and the Human

A vitalist, I would venture to suggest, is a person who is more likely to ponder the problems of life by contemplating an egg than by turning a winch or operating the bellows of a forge.

Georges Canguilhem, *A Vital Rationalist*

“To understand the vitality of vitalism is to engage in the search for the meaning of the relationship between life and science in general, life and the science of life more specifically.” (Canguilhem 2008, 61) It is this relationship that concerns us most, between a methodology of inquiry and an object itself, neither of which are easily corralled into definitions. At the crudest level, this is apparent in the core term itself: even a decade into the twenty-first century, we lack a clear definition of “life,” despite over two hundred years of its study in the guise of modern biology. This problem is more than just the challenge of handling the fascinating and seemingly endless occupants of the fringes, although these often receive undue attention; it is instead central to the question. We do not know what it is that qualifies us as being alive: the best we can do is describe the condition, accept it as a shared universal among a recognizable group of species, and quickly move on, hoping that nobody presses us too deeply on the answers.

There are two issues in play here. The first is how we recognize life outside of ourselves; and the second is what meaning is ascribed to that recognized life. These are tightly intertwined, and are perhaps best seen as inseparable—while it is certainly theoretically possible to isolate the biological question of life as an independent, detached inquiry, doing so removes it from engagement with the wider cultural work that forms our focus. More importantly, the question unravels into an undisciplined mess as soon as it is

examined: we lack a satisfactory definition of life from a scientific point of view and so are left only with the culturally created criteria for judging and interpreting it. Once these additional concerns are admitted, we are faced with qualities of life, with different strata among the living: the question of what is alive has turned to what does *it mean* to be alive, a question that ultimately becomes closely intermeshed with decisions regarding what boundaries are placed around the category of *human*.

Both of these—the living and the human—have, after a period of tightly controlled restriction, seen their boundaries expand. This is easily seen in the matter of life: as a basic rule, the more we learn about the non-human, the less trustworthy our traditional biological categories prove to be. From the movement of crystals to the development of fungal colonies covering thousands of square miles to the symbiotic presence of thousands of micro-organisms in your gut, many of the qualities heretofore used to identify the living (movement, directed growth, the presence of clearly delineated bodily boundaries) leave us with the option of either abandoning their use or expanding the domain of the animate. This proves confusing in many ways: we intuitively insist that we are different from mushrooms and crystals, but it is very hard to pinpoint exactly what that difference could possibly entail, let alone what meaning could be derived from it.

We will spend quite some time in chapter four with James Lovelock, but his observations on the meaning of life bear strongly enough on this question to warrant their inclusion here. Lovelock's interest comes from his constant use of the adjective "alive" with regard to our small blue planet.

Friendly scientists often ask me: Why do you keep on talking about the Earth as alive? This is a good question, and there is no rational answer; indeed to some of

my friends my suggestion that the whole planet is alive is not only “scientifically incorrect,” it is absurd. In reply I say that science has not yet formulated a full definition of life. Physicists and chemists have one definition, biologists another, and neither are complete.

...

Thus the physicist, Schrödinger, in his remarkable small book *What Is Life?* suggested that a long-sustained dynamic reduction of internal entropy distinguishes life from its inorganic environment; and this thought has been echoed by other physicists, especially Bernal and Denbigh. Biologists simply say a living thing is one that reproduces, and the errors of reproduction are corrected by natural selection. Neither of these definitions is helpful. The physicist’s answer is too broad and would mean that I, a grandmother, or a Lombardy poplar tree were dead, since we cannot reproduce. (Lovelock 2009, 192–3)

More on life, biology, and Lovelock’s ability to reproduce later. For now, this is merely a succinct summary of the difficulties in what initially appears a simple query.

The history of defining the human is marked by extraordinary violence and aggression: a constant rationale for slavery and slaughter is that *they* do not qualify for membership in the ranks of humanity, and therefore our behavior towards *them* is not constrained by the same ethics as towards members of our own community. This attitude surfaces in less obviously bloody registers as well, for example in the paternalism shown in international development efforts through much of the latter half of the twentieth century. While these claims are harder to make on a global scale now than as recently as a few centuries ago, it is important to recognize that they *are* still being made and they do still serve as motivation for much oppression and bloodshed. Even for people who accord all *homo sapiens* a similar status, however, the boundary between the human and the non-human has become harder and harder to maintain, both biologically and culturally. While it seems that genetic determinism—and here I am referring *not* to the cultural phenomenon but rather to the claim that all biology is reducible to identifiable genetic behavior—is, at

the very least, under attack even in biological communities, the importance of DNA as a tool for biological classification remains quite strong. The difficulty is that species previously held separate are now being found to share huge amounts of genetic code, including recent arguments that chimpanzees are actually closer to humans genetically than they are to other primates and are, in fact, close enough to warrant biological classification *as human*. We are left in a position where the biological answer to what is human depends on a fraction of a percent of genetic code, which seems intuitively insufficient, hence forcing a turn to behavior and culture, choices of action and social organization, for an answer.

We have moved now to the second register, but here the going is no easier: our primate brethren clearly participate in cultural ritual and clearly possess both their own language and the ability to learn others. Even religion, once seen as the highest proof of a truly human culture, has lost its hard boundary as primates have been seen celebrating the appearance and disappearance of the sun in what can only be seen as a mysterious forbearer of human proto-religious behavior: even with all of the distance inserted by the chronologically qualifying phrases, the notion of a fixed boundary necessarily begins to fade in the pre-dawn mist. These discoveries hit home in a peculiar way, and highlight common cultural misconceptions to which we will return in later chapters: first, their inherent fascination is proven by their constant appearance in various media (that is, animal shows edit and select content subject to all the pressure of any capitalist enterprise, and the recurrence of certain themes signifies *both* the ongoing presence of that material in the natural world, but also its anticipated interest to the viewers). Secondly, and more

importantly for our purposes, the reaction to this information is often, in slightly overstated terms, tinged with an evolutionary apocalypticism of differing degrees, reflecting a perceived threat to either human culture (“let’s see apes produce Shakespeare”) or humanity itself (“the dolphins are going to take over”). The mistake I want to highlight here centers on the term *evolution*. The growing acceptance of evolution as a scientific truth has done little to address its understanding, especially with regards to evolutionary time. The human brain is woefully ill equipped to deal with the very large or the very small, a flaw that seems compounded when time itself is concerned, leading us to project evolutionary change into a near future instead of a far-flung one. This tendency is perhaps most dramatically revealed in the New Age of the late twentieth century, with its constant predictions of a watershed moment in human history being driven by an evolutionary change, a topic that will be treated in more depth in later chapters.

We are left, then, a bit adrift, in a common situation where the general contours of defined cultural spaces are clear, yet their exact shape and boundaries blur out of existence the harder we try to bring them into focus, leaving us in an apophatic realm where to live is merely not to be dead. Historically, this proves unsatisfactory: rightly or wrongly, we insist that there is more than that, that there are qualities of life and ways to engage with the world that require the presence of an operative lurking somewhere behind the curtain of our bodies. This is the touchstone of vitalism, and whether these impulses form its source or not, they certainly are an identifiable spring from which its waters run. In the last few centuries, vitalism has emerged in two somewhat distinct forms, one focused on the individual and one focused on the natural world. The former provides the foundation for

the convoluted and often tense relationship between vitalism and science, while the latter allows vitalism to survive as a backdrop to a wide variety of philosophical and political moments. Ultimately, the joining of these two strands forms a key trope for understanding many religious movements in the west from the middle of the twentieth century onwards.

Bodily Vitalism and the Secularization of Health

I think brain is mind and mind is brain, and that science, broadly conceived, is the most effective method for learning about mind-body-brain.

Lynn Margulis, *Speculation on Speculation*

Modern Western medicine, with its focus on cadavers and diagrams, on visual structures and mechanical arrangements, has been in conflict with vitalism from the early days. Western medical practices, of course, existed in prolific variety long before what I am terming “modern Western medicine” emerges. Even anatomy, the basis for so much of the mechanistic medical model, emerges before this moment, with what we now see as proof of evolution (say, Pierre Belon’s comparative studies of the skeletons of birds and humans) being interpreted instead, in another example of science reclaiming the errors of the past as proof of present truth, as part the construction of the human body as “possible half of a universal atlas.” (Foucault 1970, 22) This mechanistic history reveals itself something like this: the body is seen as a machine, and its secrets are those of a craftsman, of the intricate details that allow for the slow unraveling of mechanical mystery. The

soul—severed entirely from the flesh—may animate the body, but increasingly the relationship between the two becomes more and more distant. This is accomplished through experimentation, through the steady proliferation of mechanical—indeed, scientific—explanations for what had previously been attributed to an unseen vital force that inhabited and operated the body. Eventually, a dizzying array of bodily functions—from the beating of the heart to the filtration of the kidneys—gain a satisfactory mechanical explanation and a critical mass of sorts is reached where the range of processes explained this way overwhelm the remaining mysteries, allowing biological and medical science to safely, publicly, and proudly proclaim that it is just a matter of time before other bodily activities and functions are also subsumed beneath an all-encompassing mechanistic framework.

It is a sturdy model, and one that has survived in varying guises for centuries. Yet despite its own claims, progress in scientific medicine has never been linear. This is most evident in the early days, where the mechanizations of discovery are not shrouded by walls of pre-existing facts; here we see an odd sort of reversal of process where the mechanics of function have to be re-inserted into the story at a later date. The body has never been a mechanical contraption: we never have been able to isolate a part of the body and successfully ask, “what does this do?” the way an engineer can isolate the crankshaft of a vehicle or the valve of a pump.

[O]ne does not discover an organ’s functions by asking what it is used for. Only by following the various moments and aspects of a function does one find the organ or apparatus responsible for it. It was not by asking *What function does the liver serve?* that the glycogenic function was discovered but by measuring the glucose in blood drawn at various points in the circulatory flux of an animal deprived of food for several days. (Canguilhem 2008, 7)

This remains a discursive issue, as a clear tension exists between the fits and starts, the unintended consequences, the dead ends of the reality of medical research and the metanarrative proposed above of movement towards an eternal truth.

The importance of the ascent into popular understanding of this mechanistic view cannot be overstated, nor can its sizable and practical impact: whatever our concerns are regarding modern allopathic medicine, it marks a clear improvement over the induced vomiting and bloodletting of mainstream medical practice of the early nineteenth century. Indeed, the rise of standardized allopathic treatment (hand in hand with the rise of the American Medical Association, and all of the formal bureaucracy and institutionalization that implies) is clearly closely tied to the growth of America between the Civil War and World War I.

As one example, Charles E. Rosenberg's *The Cholera Years: The United States in 1832, 1849, and 1866* shows in convincing detail how our understanding of disease moved from a proof of moral and ethical shortcomings (disease being a reflection of our internal state) to the result of physical conditions that could, therefore, be far more easily alleviated. According to Rosenberg, "cholera, a scourge of the sinful to many Americans in 1832, had, by 1866, become the consequence of remediable faults in sanitation. Whereas ministers in 1832 urged morality upon their congregations as a guarantor of health, their forward-looking counterparts in 1866 endorsed sanitary reform as a necessary prerequisite to moral improvement." (Rosenberg 1962, 5) Note that here we have a clear decrease in the importance of a bodily, vital energy: cholera is no longer the product of some internal, ethereal force but rather the result of physical contexts and contacts which can be

managed, organized, even controlled.

The increasing dominance of a mechanized model should have spelled the end of bodily vitalism. That it didn't speaks to three movements: first, even in the medical community—in fact, even among those responsible for what is now accepted as the debunking of vitalism—it retained a somewhat hidden position, revealing what I would claim as an anxiety about the unavoidable endpoint of mechanism, the dry reduction of each of us to overly complex clocks, merely fulfilling the unavoidable result of our gears clicking inexorably onwards towards death. Second, as the mysteries of the body were explained, the mysteries of the brain and of consciousness itself were in the ascendant, providing a healthy refuge for the vitalist explanation; a situation that remains today: for all we know of how joints and tendons operate, our understandings of the complex soups of the body—most notably the stomach and the brain—remain quite primitive by comparison. Finally, closely related to the discussion of the brain, and in a pattern we will see again when we examine “worldly” vitalism, as secularism rises in the west, the religious concept of the soul resists marginalization by migrating into new territory which proves fertile ground for vitalist roots.

Before examining this last point in more detail, we should at least briefly examine the notion of secularism itself. A term “originally employed in the wake of the Wars of Religion to denote the removal of territory or property from the control of ecclesiastical authorities,” (P. L. Berger 1969, 106) secularism has come to refer to a generic operation whereby some zone of cultural influence is denuded of its overtly religious content. Our understanding of secularism has grown considerably, to the point where a summary of a

summary may be the most expeditious route towards general understanding. Building on the work of Linda Woodhead and Paul Heelas, Christopher Partridge writes of

a useful fourfold typology of secularization theories: the disappearance thesis; the differentiation thesis; the de-intensification theory, and the co-existence theory. The former two are the dominant models, the latter two are less common. The *disappearance thesis*, which reflects nineteenth-century theories, claims that religious understandings of the world will effectively disappear in the West. The *differentiation thesis* is more cautious in that it argues that religion will become privatized and socially insignificant: “religion gets pushed out of social domains whilst remaining (of some) significance in private life.” The *de-intensification theory* claims that religion will remain in society, but only in a de-intensified, weak and insubstantial form. The *co-existence theory* is more positive, in that, “whilst secularization takes place in particular circumstances, in other contexts religions retain their vitality, even grow.” Whatever the merits or demerits of this typology it does highlight the fact that there is no one model of secularization, just as ... there is no one theory of the processes involved. (Partridge 2004, 1:8)

Interestingly, this typology echoes the four ways in which Ian G. Barbour, in *Religion and Science: Historical and Contemporary Issues* sees religion and science interacting (through conflict, independence, dialogue, or integration). (Barbour 1997, 77–103)

Barbour’s categories are neither unproblematic nor universally approved (Cantor and Kenny 2001), but they do speak in support of Partridge’s observations of a set of structural mechanisms within contemporary society.

Effectively collapsing the distance between *disappearance* and *differentiation*, Peter Berger, from whom the earlier etymology of secularism comes, claims “it is not difficult to put forth a simple definition of secularization for the purpose at hand. By secularization we mean the process by which sectors of society and culture are removed from the domination of religious institutions and symbols.” (P. L. Berger 1969, 107) We will squabble with Berger’s introductory clause. The difficulty with his definition, and the part that ends up working directly against his initial claim, is that while secularization may

empty cultural structures of the obvious influence of formalized religious institutions, that does not equate—at all—with an emptying of religious content from the cultural milieu. Instead, we find that in the very structure of the rising tide of science, there are pockets and indeed entire organizing principles, that maintain space for decidedly “unscientific” thoughts, behaviors, and cultural systems. Giddens, to whom we turned earlier when discussing the movement of science over culture in general, provides some insight into how this happens, when he claims that “the specific authority which science once enjoyed, which turned it into a sort of tradition, could only be protected in so far as there was an insulation dividing scientific expertise from the diverse forms of knowledgibility of lay populations.” That is, as long as a church or, later, highly privatized forms of obtaining and disseminating technical knowledge, were able to maintain a thick boundary between those in the know and the rest of us, absolute authority was still possible. Enter Wikipedia, and that is no longer possible.

The possession of esoteric knowledge, of course, still guarantees a certain “protection” for the technical expert against the probings of lay individuals. But this dividing line is no longer a generalized one, sealing off science as a whole from the “local knowledge” of laypersons. The very specialization which expertise undergoes makes it obvious to everyone that there can be no “experts of all experts.” But that all expert claims to knowledge are not only very specific but also liable often to be internally contested.

The fact that experts frequently disagree becomes familiar terrain for almost everyone. More than this, however, the claim to universal legitimacy of science becomes much more disputed than before. All kinds of cult, folk knowledge and traditional orientations return to claim some sort hegemony alongside the realms of orthodox science. ... The many tensions that develop between (diverse interpretations of) science and alternative forms of knowledge-claim are more disruptive than would be the case if this were just a matter of science “coming to understand itself better.” (Beck, Giddens, and Lash 1994, 185–6)

In any case, discussions of secularism are inseparable from discussions of

boundaries: “secularization is only possible in societies in which there is a clear distinction between the religious and the non-religious.” (Partridge 2004, 1:9) As such, we are also speaking of a process of displacement of content, of meaning moving—sometimes meandering and sometimes in a surprising sprint—into different spaces. William Irwin Thompson who, along with his longtime collaborator David Spangler, will return in the final chapter, writes, “Once before, people looked to temples and palaces for the birth of the divine child, but he chose a stable. Now people look to religion for a manifestation of the divine, but I rather think the revelation has already happened, when they weren’t looking and where they least expected it: in the secular and profane conditions of our ordinary lives.” (Thompson 1991a, 176) The mechanics of secularization are really mechanics of encroachment and retreat, of the acquisition and loss of legitimacy and of power (this is why Lyotard’s focus on claims to authority and legitimacy remain so relevant to these considerations).

This may be illustrated by returning to the rise of mechanism and its accompanying movements towards secularization, where we now could claim to understand how various bodily processes operate, and could now ascribe their efficiency to specific chemical or mechanical processes, not to some unseen energy. Clearly, within communities of belief, such energy would continue to be seen as part of the definition of a “soul” or as proof of God’s dwelling in the world. However, even within a growing secular population, within those groups that largely accepted the dominance of “science” over “religion,” we find the continuance of vital thought and tendencies. Here, while medical (and other forms of) reductionism developed into formidable currents of thought which continue to dominate

much of our understanding of the physical world, bodily vitalism survived and, indeed in the late twentieth century, surged again to the forefront of popular understanding. Its survival was—at least until relatively recently—a retreat, a ceding of ground to the encroaching scientism. As Robert Fuller summarizes in his *Alternative Medicine and American Religious Life* (recognizing that our focus on vitalism is notably smaller than his engagement with religion writ large), “the advent of modern science has tended to relegate religion and medicine to separate spheres, and most people feel quite comfortable with the assumption that religious beliefs are irrelevant to matters of healing and health.” (Fuller 1989, 5)

While Fuller’s claim may be true in terms of popular perception, the historical record shows a much more convoluted and complex relationship. Perhaps the most dominant example is that of chiropractic and osteopathy, both of which have moved from explicitly spiritual and vital beginnings to wide-spread acceptance (near total for osteopathy, less so for chiropractic, although it remains an interesting liminal case, more “scientific” than energy based healing methods, but less accepted than “modern” medicine). Emerging at the turn of the century, chiropractic was the creation of D. D. Palmer (1845-1913), although its rapid spread was spearheaded by his son, B. J. Palmer (1881-1961). Both trumpeted the importance of what D. D. termed *innate*, an explicitly vitalist ascription of the presence of life to an intelligent life force that surges forth from the creator to ourselves. At the same time, Andrew Taylor Still (1828-1917) was developing his theories of osteopathy, which relied on a conception of an electric current running through the body. For both practices, the key was flow and openness: if innate or

the electric life force were blocked, we were prevented from functioning well, from being healthy. As such, the alignment of the constituent parts of the body—with, in both cases, a focus on bones and joints—could either be correct, allowing the vital force full freedom to course through our bodies, or it could be incorrect, and we would suffer both from the buildup of the force at the blocked site, as well as from its depleted presence elsewhere. Notice that we have a fascinating combination of systems here: both osteopathy and chiropractic depend upon the increasing volume of mechanistic bodily knowledge for their anatomical expertise, while at the same time both strongly posit the presence of a force that is, at best, invisible to that same expertise. The fact that later generations of chiropractors and osteopaths would intentionally, and often virulently, distance themselves from their spiritual roots is of interest as well: the vital impulse remained strong enough to serve as the basis for these practices, but not so strong that it could withstand a direct confrontation with emergent medical practice. Fuller's observations on the recognizably religious and, more specifically, American religious nature of chiropractic hold importance as we move through the following chapters:

The emergence and dissemination of chiropractic philosophy represents a structural replay of the sectarian patterns so prominent in American religious history. Although its spirituality is drawn from noninstitutional sources chiropractic nevertheless evidences many features traditionally associated with such native-born American sectarian religious groups as Christian Science, Seventh Day Adventism, the Mormons, Pentecostalism, and Jehovah's Witnesses. (Fuller 1989, 77)

There were also, of course, less compatible interactions between vitalism and the emerging sciences. Take, as an example, the Graham cracker, the only surviving remnant (other than his profound influence on the dietary practices of various forms of Seventh Day Adventism) of the crusades of Sylvester Graham (1794-1851), who would have been

horrified at the success of such a commercialized, mass-produced comestible. Stephen Nissenbaum introduces Graham, the dominant subject of his *Sex, Diet, and Debility in Jacksonian America*, like this:

Ralph Waldo Emerson called him “the prophet of bran bread and pumpkins.” In his own day he was widely regarded as a wild-eyed fanatic and a crank, and even many of his own supporters viewed him with a curious mixture of idolatry and exasperation. ... Sylvester Graham wished to purge the souls of his generation by cleansing their debauched bodies. In his view, the source of the nation’s woes lay not in slavery, but in diet. In retrospect, his crusade came to appear more trivial than dangerous ... (Nissenbaum 1980, 3)

Nissenbaum’s account is fascinating: Graham was obsessed with notions of purity, with a concern for the dangerous and debilitating power of sexuality, with the more-than-symbolic power of home-baked bread serving as manna for a nation’s impoverished souls. What is more directly relevant are the ways in which vitalist ideas pervade his project. As may be expected, eighteenth century vitalists, under the onslaught of the explosion of knowledge discussed above, fought back with ideas that Graham found in the works of Xavier Bichat (1771-1802) and François Broussais (1772-1838).

Bichat had proposed that all living organisms were engaged in a continuous struggle for survival against the inorganic forms that surrounded them: life itself was a constant battle between the principles of vitality and those of physics and chemistry, and death was simply the victory of the latter over the former. Broussais, another French theorist, had proposed that food and drink, upon which living organisms depended for their survival but which literally invaded them from without, constituted the single greatest threat to vitality. From Broussais, then, Graham picked up the idea that it was the digestive system that formed the crucial background in the struggle between organic and inorganic forces. (Nissenbaum 1980, 20)

These notions mixed with Benjamin Rush’s (1745/6-1813) ideas on the contributions of what he termed artificial stimulants (for example, alcohol and red meat) towards an individual’s debility, a term in common circulation to refer to the antipode of a state of

healthy, energetic activity. Rush was a devoted moderate in these areas, demanding “temperance—not abstinence. He was more concerned about drunkenness than drinking.” (Nissenbaum 1980, 70) Graham held no such ambiguity, advocating a diet made entirely of vegetables and vegetable matter—including his beloved wheat-based bread, baked explicitly (and this will not be the last time that gender politics raise their head in unexpected locations) by “the wife, the mother only,” and imbued with all the power “of a mother nursing her family with bread and affection” (Nissenbaum 1980, 8)—and eschewing all alcohol, which he did so for concerns over its biological effects, not its tendency to impair judgment and alter behavior. Graham’s concerns were on the relationship between our own innate (and, in his mind, innately Christian) vital selves and the (usually negative) impacts of the substances we ingest, with both licentiousness and illness being held as proof of a dangerous imbalance. His ideas were profoundly incorrect, and more a product of his own biography and a burgeoning cultural discomfort with the ever-growing commercial presence in a still-expanding America (his bread was best if baked from grain grown locally, harvested locally, and ground by hand in the home in which it would be consumed), but their concerns and their general shape are very much relevant. Finally, lest we see him as a crackpot easily plucked from the margins of history, it is important to remember that he was, albeit briefly, wildly successful: “Thousands of people in the 1830s attended Sylvester Graham’s lectures, read his books, and, for a time at least, changed their lives. They did so, if their own testimony is to be believed, not in order to enter the emergent middle class, but for a simpler and even more pressing reason: They were sick, and they wished to become well.” (Nissenbaum 1980, 140)

Vitalism's survival was also aided by the rise—chronologically parallel to the medical developments discussed above—of the field of psychology. While I would not claim that Freud was a vitalist, I do see the explosion of interest in the questions of consciousness, in the explorations of exactly what it is that animates our behaviors and desires, as being a fragmented continuation of the original vitalist project. Bodily vitalism has been evacuated upwards, moved into the realm of the mind, and the fact that these explorations were done under the guise of science, in the end, provides a strategy for their own survival—that is, to the degree to which psychology has legitimized itself, it has also created a culturally approved arena for discussions of matters of the mind. The difficulty is that, especially compared to other bodily organs, we know so very little about how the mind (or, to use the currently dominant term, consciousness) operates, about what it actually is. This absence of knowledge may very well function as a vacuum, creating an unbearable emptiness that forces a huge range of content to rush in. Consciousness becomes the most malleable of signifiers, serving equally well in referring to highly scientifically charged discourses on the interoperability of neural pathways and to largely apocalyptic claims of shared universal developments in human perception.

A key continuity here is that of illness: remember that vitalism is almost always associated with questions of health. Having been forced to abandon (at least temporarily) most claims concerning the health of the body, vitalism finds refuge as an explanation for the maladies of the mind, whose mysteries are far less accessible than those of the kidneys. Indeed, it is in the brain that the mechanistic model fails most spectacularly. In a pattern that is repeated quite often, an early rush to provide a clearly mechanical explanation is

thwarted by the ability of the human organism to remain a fluid, flexible, and malleable entity. Where early research claimed to identify specific areas of the brain as determinative of different domains of human functioning, it is now clear that such a mapping is largely impossible: in different circumstances, the brain will literally re-wire itself, rebuilding lost functionality in different areas and through different neural pathways. These discoveries are very much part of a larger intellectual pattern where terms like *complexity* and *systems theory* are being used more and more to describe what were once thought of as mechanical models; here specifically it is the concept of a self-correcting system that is of the greatest importance, an idea we will treat in more depth in our discussion of Gaia in chapter four. In the end, the difficulty is one of boundaries, of how to cordon off this bodily function from that, this bodily system from the other. It has become clearer and clearer that such sectioning, such isolation, proves unsatisfactory, that the human (indeed, Canguilhem would insist that *all* life) exists only in orientation towards and participation with its environment. He writes, “that, to do mathematics, it would suffice that we be angels, But to do biology, even with the aid of intelligence, we sometimes need to feel like beasts ourselves.” (Canguilhem 2008, xx)

This quote is metaphorically resonant: even for Canguilhem, vitalism is no longer the result of God’s work in the world, and that which animates us is no longer necessarily a pure and untainted manifestation of sacred power. As the tangible nature of the vital force becomes more and more suspect—that is, as medical science disproves various theories of an ethereal substance either in the air or in ourselves—vitalism loses some of its immediacy, its ability to be seen as a set of forces available for direct manipulation.

Additionally, of course, with the rise of psychotherapy, the vital forces more than ever before can assume an ambivalent, if not downright antagonistic nature: our unconscious is something that must be managed and controlled, something that threatens to burst free and reveal itself in inappropriate ways. This change proves unacceptable for those looking for a vitalist explanation, and by the end of the twentieth century, it has largely been addressed: we see a return of claims centering around the concept of a life-force, an active energy that is immediate and present in and through our bodies. This resurgence of bodily vitalism is closely tied to the engagement with Eastern practices that occurs in North America in the late nineteenth and throughout the twentieth century: the growing awareness—however distorted through the twin lenses of colonialism and capitalism—of *chi*, *prana*, *reiki*, and other concepts originating from Asia allows bodily vitalism to regain much of its lost cultural eminence. I would claim that this helps us understand the form these practices take as well: that what emerges has much more in common with nineteenth century American healing movements than with any specific tradition of the Far East: as a single exemplar, note the radical transformation of yoga from an ascetic discipline to a health and lifestyle enhancement commodity.

Worldly Vitalism: Nature and the Wild

Concepts are not waiting for us ready-made, like heavenly bodies. There is no heaven for concepts. They must be invented, fabricated, or rather created and would be nothing without their creator's signature.

Gilles Deleuze and **Félix Guattari**, *What Is Philosophy?*

Nature emerges from this exercise as "coyote". This potent trickster can show us that historically specific human relations with "nature" must somehow—linguistically, ethically, scientifically, politically, technologically, and epistemologically—be imagined as genuinely social and actively relational; and yet the partners remain utterly inhomogeneous. "Our" relations with "nature" might be imagined as a social engagement with a being who is neither "it", "your", "thou", "he", "she", nor "they" in relation to "us". The pronouns embedded in sentences about contestations for what may count as nature are themselves political tools, expressing hopes, fears, and contradictory histories. Grammar is politics by other means.

Donna Haraway, *Simians, Cyborgs, and Women*

As we have seen, the rise of allopathic medicine pursues bodily vitalism relentlessly, eventually forcing it to nearly relinquish the body altogether in preference for a tenuous connection with the human soul. This reflects a contraction inwards, a shrinking down to a single point of a previously all-encompassing concept. It is also, I would claim, only half of the vitalist lineage: concurrent with it (and, of course, never truly isolated from it) is a movement outwards, an expression of vitalism that goes far beyond the human, eventually enfolding within its domain all of the natural world.

It is quite easy to see in the last two centuries a simple pattern where scientific and religious thought are competing for the same areas in social discourse, with science swiftly displacing the religious, culminating in our current "secular society." (Indeed, in his

discussions of cholera, Rosenberg has just such a model in mind, especially in his original conclusion. (Rosenberg 1962, 228)) Doing so is dangerously incorrect, not because it fails to account for what is often seen as a religious resurgence in our contemporary world, but rather because it fails to accurately capture the historic phenomenon: what secularization entails is not a lessening of religious ideas, it is a lessening of the rigidity of religious structures. And, in fact, this structural softening may indeed be responsible for the growth of forms of religious expression that fall beyond the scope of traditional orthodoxy. Recall Campbell, who concludes that

the changeover from a dominant religious orthodoxy to a dominant scientific orthodoxy does not seem to correspond to any greater control of heterodox societal beliefs, for while the decline in power of organized ethical religion appears to have removed the most effective control over heretical religious beliefs, a growth in the prestige of science results in the absence of control of the beliefs of non-scientists and in an increase in quasi-scientific beliefs. Ironically enough, therefore, it could be that the very processes of secularization which have been responsible for the “cutting back” of the established form of religion have actually allowed the “hardier varieties” to flourish, or possibly created the circumstances for the emergence, not of a secular scientific society, but of a society centered on a blend of mysticism, magic and pseudoscience. (Campbell 1972, 23–24)

Campbell is reacting to a process where what are clearly religious concepts and religious behaviors move outside the church and, in doing so, become confusing to cultural observers who had prior conflated the structure with the content. In this, I would squabble with his dominant metaphor, insisting that religion does not move underground: it just goes outside.

While often this meant merely moving outside of the established church, for our discussions it also meant actually wandering outdoors, into the waiting wilderness. Note the specificity of the phenomenon under consideration: key here are moments when nature is used as an escape from an established socio-religious structure, when religious thought

and action are moved from an accepted, normative location of practice to one seen as either “away from” the creations of human technology and culture or “closer to” some innate truth held in the natural world itself. There is in this a sense of a magnetic presence within nature that attracts people, with promises of vitality, health, longevity, even magical power; this energy is the core of what I am terming worldly vitalism. Before considering this in more detail, however, there are some initial concepts that must be examined, most importantly, what is this “nature” of which we speak? Doing so will allow the opportunity for a distressingly superficial pass through the historical relationship between the colonizers of North America and their environment, however we will have the opportunity later to return to this in more depth.

Perhaps unsurprisingly, nature proves to be a somewhat elusive concept: while portraying itself as eternal and unchanging, it seems instead that our views of the natural world are both extremely malleable but also—and more important for our later considerations—nearly always somewhat conflicted if not downright contradictory. This thesis is greatly indebted to the work of Catherine Albanese, who provides a useful summary of the complexity of the term under consideration:

For some, nature meant the physical world ... for others, nature became an abstract principle, an environmentalism so far extruded into the starry skies that it lost the familiar touch of matter. In a related distinction, for some, nature meant the truly real. For others, it became the emblem of the higher spirit.

Similarly, adherence to nature as a central religious symbol could lead to different—though related—injunctions for living. On the one hand, nature religion seemed to encourage the pursuit of harmony, as individuals sought proper attunement of human society to nature and thus mastery over sources of pain and trouble in themselves and others. And yet, nature religion fostered more ambivalent themes of fear and fascination for wildness and, at the same time, an impulse toward its dominance and control. (Albanese 1990, 12)

This phenomenon—and more of Albanese’s insights—will be considered in significant detail in later chapters, for now we will briefly examine its general contours, beginning with the early European colonization of North America. As with our discussion of medicine above, this starting point comes fast on the heels of a massive upheaval of cultural knowledge, in this case the rise of geology. At the most abstract level, this was a process of giving structure and explanation to the irregularities of God’s work: if the sphere was the perfect shape, our increasing knowledge of the irregularities of Earth’s surface, its orbit, even its vertical position all raised questions about its inherent imperfection. Indeed, while “mountains, for example, had generally been regarded in the early seventeenth century as warts, pimples, blisters, and other deformities on the earth’s surface,” (Nash 1967, 45) by the end of the eighteenth century, the natural world—irregular features included—was more likely to be seen as proof of God’s handiwork. We will encounter this terrain again in our discussion of John Muir’s role in developing theories of glaciation in chapter three; for now, another figure who will return in later chapters, British philosopher Mary Midgley summarizes the theological issues at stake quite nicely:

The earth’s moral and spiritual reputation could not improve until it could somehow be seen as being more intelligible—that is, until somebody found a more suitable way of trying to understand it. Finding one was the achievement of eighteenth-century geologists, notably of James Hutton. These geologists’ first success was in discovering a repair mechanism that could balance the process of erosion: a way in which the earth might be rebuilding itself so as to constitute a lasting system. They did this by showing how the weight of accumulated sediments crushes and eventually melts the lowest layers of rock, causing them to erupt through volcanoes and so to rebuild the mountains.

This meant that the motion of the earth could be seen as a continuous cycle, an effective ongoing process of maintenance, no longer a one-way path to decay. The geologists’ second achievement, which followed from this, was to show that the

process was not a recent expedient but had apparently been going on for countless ages. It was a vast, steady, regular, reliable machine that showed, in Hutton's memorable words, "no vestige of a beginning—no prospect of an end". It might even be something comparable to the eternal system which Newton had proposed for the heavens. (Midgley 2004, 130–1)

It is useful here to introduce some additional terminology to help clarify what is being examined, and in doing so I am taking advantage of Roderick Frazier Nash's distinctions between nature and the wild (or wilderness), which are predicated on the existence of a shared boundary with humanity: nature is what lies beyond the boundaries of the socially constructed; the wild looms threateningly even beyond that. Our pastoral desires, our idealized visions of rural and agricultural life, our sense of the inherent *goodness* of bucolic vistas, these all depend on a certain sense of nature and are, in fact, the result of centuries of interaction with the wild, interactions that were often fearful, violent, and deadly. There is a raw accuracy to this description when seen through the westward colonization of North America: life on the edges of white civilization was terribly difficult, a constant struggle against the myriad obstacles offered by the wild: the severity and unpredictability of the weather, the presence of unfamiliar and deadly wildlife, the endless variety of disease and hardship of frontier life. And, of course, the ongoing violence between the colonizers and the indigenous population fueled the popular imagination with the "savage dangers" of the wild. But there was a moral quality to the risks posed by westward expansion as well:

A more subtle terror than Indians or animals was the opportunity the freedom of wilderness presented for men to behave in savage or bestial manner. . . . Morality and social order seemed to stop at the edge of the clearing. . . . Would not the proximity of wildness pull down the level of all American civilization? Many feared for the worst, and the concern with the struggle against barbarism was widespread in the colonies. Seventeenth-century town "planters" in New England, for instance, were painfully aware of the dangers wilderness posed for the

individual. They attempted to settle the northern frontier through the well-organized movement of entire communities. (Nash 1967, 29–30)

It is important to realize that, with very few exceptions, the expansion of America was an effort to conquer and control the wild, not an effort to embrace it: the job of the settler was to clear land, to establish a foothold against the threats they faced, to provide a bulwark against the wild. In essence, to create *nature*, which only exists with the juxtaposition of the human and the wild. We idealize our purple mountains majesty, but only by following them with the agricultural vision of rolling waves of grain: nature may include the wild, but it is formed through the farm, the garden, the park, the settlement, the clearing. This is merely the latest chapter in a long story, although it may be the most impactful and is certainly the most dramatically powerful over the shortest periods of time. Giddens provides both the long view and an anticipatory linkage to the later topic of environmentalism:

One way to read human history, from the time of the rise of agriculture, and particularly the great civilizations, onwards is as the progressive destruction of the physical environment. Environmental ecology in the current period has arisen mainly as a response to perceived human destructiveness. Yet the very notion of “the environment,” as compared to “nature,” signals a more deep-lying transition. The environment, which seems to be no more than an independent parameter of human existence, actually is its opposite: nature as thoroughly transfigured by human intervention. We begin to speak about “the environment” only once nature, like tradition, has become dissolved. (Beck, Giddens, and Lash 1994, 77)

The industrialization of the North American west was shockingly effective and efficient: entire populations were destroyed or relocated, and a constant flow of population into the country pushed its established boundaries ever further towards the Pacific. In doing so, the ratio between the natural and the wild changed dramatically, and as the natural became more and more ingrained in our consciousness, we became more and more enamored with

its offerings.

In the early nineteenth century, for the first time in American history, it was possible to live and even to travel widely without coming into contact with wild country. Increasingly people lived on established farms or in cities where they did not experience the hardships and fears of the wilderness. From the vantage point of comfortable farms, libraries, and city streets, wilderness assumed a far different character than from a pioneer's clearing. ... wilderness had actually become a novelty which posed an exciting, temporary alternative to civilization. (Nash 1967, 57)

It is only after this that the idealization of the wild itself is possible: John Muir, one of the primary subjects of the next chapter, may have often professed a desire to abandon human settlements and live a solitary life among his beloved Sequoias, but the truth is that he never did so, choosing instead (and for a variety of reasons) to always maintain a home in society to which he could return.

These two ideas, nature and the wild, never fully resolve themselves, a situation perhaps most eloquently represented by the formation of National Parks. The larger of the National Parks are, at their core, intentional compromises of these ideas, where a geographic area is cordoned off and reconstructed, and then within these controls, promoted as wild. And, indeed, may in fact be so. (The question of whether the wild observed can actually be considered wild is a philosophical concern that, while tangentially important to our considerations of radical environmentalisms later, will be avoided at present.) This reflects a sense that the proper role of the wild is as a resource, as something that should be preserved for purposes other than its own, whether nostalgia, a burgeoning environmental ethic, or as a resource for an increasingly urban population becoming more and more aware of the complications of their concrete and steel-bound lives. Nature become something that is, at its core, highly unnatural, a phenomenon that, in a different

register, Ulrich Beck describes thus:

It is already becoming recognizable that nature, the great constant of the industrial epoch, is losing its pre-ordained character, it is becoming a product ... “Nature” becomes a social project, a utopia that is to be reconstructed, shaped and transformed. *Renaturalization* means *denaturalization*. Here the claim of modernity to shape things has been perfected under the banner of nature. Nature becomes politics. In the extreme case which can already be observed today, it becomes the field for genetic engineering solutions to social problems (environmental, social and technical security, and so on). That means, however, that society and nature fuse into a “social nature,” either by nature becoming societalized or by society becoming naturalized. That only means, however, that both concepts—nature and society—lose and change their meaning. (Beck, Giddens, and Lash 1994, 27)

Beck’s focus, of course, is on the social (or, here, the social nature), while ours expands into the vacuum that is left behind in his fusing of domains. There are highly problematic implications here, most revolving around the entanglement of post-industrial cultures of consumption and this fused social nature. On the pessimistic side of things, we veer towards what Baudrillard describes as

Nature, in the form of a countryside trimmed down to the dimensions of a mere sample, surrounded on all sides by the vast fabric of the city, carefully policed, and served up “at room temperature” as parkland, nature reserve or background scenery for second homes is, in fact, a recycling of Nature. That is to say, it is no longer an original, specific presences at all, standing in symbolic opposition to culture, but a *simulation*, a “consommé” of the signs of nature set back in circulation—in short, nature *recycled*. If we have not yet reached this point everywhere, it is nonetheless the current trend. Whether we speak of countryside planning, conservation or environment, it is, in every case, a question of recycling a nature which is itself doomed. Like events, like knowledge, Nature is governed in this system by the *principle of being up-to-the-minute*. It *has to change* functionally, like fashion. It provides an *ambiance* and is therefore subject to a replacement cycle. (Baudrillard 2004, 100–1)

The underlying notion is important: we will in later chapters illustrate in more depth just how socially constructed our notion of nature is, and in doing so the distinction between nature and the wild will return with even more importance. For now, however, it should remain in the background as our immediate concern—regardless of which serves as the

object—is the energy seen as animating the external world.

The source of this animating energy may be seen as existing on a spectrum containing, at one extreme, “God as Nature,” where the natural world is coterminous with a sacred ultimate. Here, the vital force is the deity itself and, as such, the natural world is seen as a set of sacred exemplars, a resource for social, ethical, and communal learning. Nature’s worth comes precisely from its vitality, as that is the manifestation of the sacred in the world: nature itself is a Eliadean theophany, revealing the hidden mysteries by its very presence. The other end of the spectrum sees nature as existing solely for itself: there is no outside force that animates it, instead, nature provides its own vitality. Here, there is no ultimate rationale for nature, no guiding principles upon which it sheds light: the vitality of life is life itself, no more, but certainly no less. The clear difference between these two views is the role of the human, with the first being clearly anthropomorphic, maintaining the sense that the world exists *for the human*, and that the human’s rightful place is at the center of that world. The human is often irrelevant to the latter view—we are instead an accident of evolution, and from nature’s point of view, are largely a negative hindrance to the ongoing development of other species. There is, of course, a tension—if not downright open conflict—between these perspectives, stated in its most gentle register here by Arne Næss:

The ecological field worker acquires a deep-seated respect, or even veneration, for ways and forms of life. He reaches an understanding from within, a kind of understanding that others reserve for fellow humans and for a narrow section of ways and forms of life. To the ecological field-worker, *the equal right to live and blossom* is an intuitively clear and obvious value axiom. Its restriction to humans is an anthropocentrism with detrimental effects upon the life quality of humans themselves. This quality depends in part upon the deep pleasure and satisfaction we receive from close partnership with other forms of life. The attempt to ignore

our dependence and to establish a master-slave role has contributed to the alienation of humans from themselves. (Næss 1995a, 4)

The movement here is typical of much of what we will encounter with regards to worldly vitalism: we must expand, exceed, broaden, and grow beyond the constrictions of our current world view and this development is centered often on recognizing connections and interactions that were previously either ignored, intentionally hidden, or lay dormant. We are, once again, seeing manifestations of the rise of complex systems and their application across domains, although the writers are often situated outside the realm of science *per se*.

A prolonged example from Georges Bataille is worth considering: Bataille is attempting to conduct a thought experiment about the origin of life on the planet and, in doing so, anticipates many themes that we will visit again.

As we know, death is not necessary. The simple forms of life are immortal: The birth of an organism reproduced through scissiparity is lost in the mists of time. Indeed, it cannot be said to have had parents. Take for example the doubles A' and A'' , resulting from the splitting in two of A ; A has not ceased living with the coming into being of A' ; A' is still A (and the same is true of A''). but let us suppose (this is purely theoretical, for the purpose of demonstration) that in the beginning of life there was just one of these infinitesimal creatures: It would nonetheless have quickly populated the earth with its species. After a short time, in theory, reproduction would have become impossible for lack of room, and the energy it utilizes would have dissipated, e.g., in the form of heat. Moreover, this is what happens to one of these micro-organisms, duckweed, which covers a pond with a green film, after which it remains in equilibrium. For the duckweed, space is given within the narrowly determined limits of a pond. But the stagnation of the duckweed is not conceivable on the scale of the entire globe, where in any case the necessary equilibrium is lacking. It can be granted (theoretically) that a pressure everywhere equal to itself would result in a state of rest, in a general substitution of heat loss for reproduction. But real pressure has different results: It puts unequal organisms in competition with one another, and although we cannot say how the species take part in the dance, we can say what the dance is. (Bataille 1989, 32–3)

Within the primary material under consideration, these themes are most clearly evident in James Lovelock and Lynn Margulis' Gaia Theory, which claims—and, indeed, in at least a limited fashion has been largely accepted as proving—that the Earth itself is just such a

system, able to regulate its own temperature, the composition of its atmosphere, the production of various chemicals, etc. In noting this, we also return to the issue of reception: for the scientific community, the largest obstacle to the acceptance of Gaia was a perception that there was also a claim of how these changes were managed, an ascription of consciousness or, indeed, vitality, to the force “behind the curtain.” For many in that community, Gaia was only accepted once it was publicly declared that, indeed, the space behind the curtain was empty: there was nothing driving this arrangement, nothing that guided the self-regulation. While this allowed Gaia to gain scientific credibility, it was immediately discarded as the idea hit the public consciousness. Here, in the realm of common culture, one of the key attractions to Gaia is that it offers a purpose, a vision where the entire planet is alive, animated, and is somehow offering a telos towards which we may strive. We will return to Gaia in much greater depth in chapter four; for now, suffice to note that these are not solely recent considerations. Writing in 1965 of Carl Ritter’s *Comparative Geography* of 1817, Canguilhem claims that,

according to Ritter, without man’s relation to the land—to all land—human history is unintelligible. The earth, considered as a whole, is the stable ground for the vicissitudes of history. Terrestrial space and its configuration are, consequently, not only geometrical and geological objects of knowledge, but also sociological and biological ones.” (Canguilhem 2008, 106)

This intertwining of the natural world with various socio-biological concerns is not without its own dangers. Often, vitalist movements—especially the newer, highly environmentally conscious ones—cloak themselves in a moral invulnerability: who, after all, could argue *against* the survival of the planet? Who could not agree that clean air, clean water, and a healthy Earth are goals towards which we should all contribute our

energy and effort? Doing this often masks the quite conflicted relationship between these movements and their own political histories, a set of conflicts that play out along the axes under consideration here as well. So, as an example, we have the eugenics programs of early brain research, which attempted to use the core composition of the brain—the source of the vital energy itself—as a proof of humanity’s division into superior and inferior racial classifications or, more central to our concerns here, we have the relationship between German romanticism of the late nineteenth century and both the Nationalist and Nazi movements as well as the later environmental and pagan movements of the twentieth.

In any case, half of the stage is now set. We now turn to the other half, for alongside the ongoing conversations about science and medicine, about vitalism and life itself, run a parallel set of discourses which are even more explicitly religious in nature, an intentional pun about both their internal composition and their focus. To these concerns we now turn.

Religion, Natural and Otherwise

When I suggest, then, that the modern study of religion functions like both a cultural mutation and a form of secret knowledge, I am not romanticizing. I am trembling. I am also seeking to place the field within a long and quite serious history of mythological, literary, and ethical reflection on the psychology and politics of secrecy in Western thought.

Jeffrey J. Kripal, *The Serpent's Gift*

If vitalism, the subject of the previous chapter, marks one pole around which this analysis circulates, religion, and more specifically religious concerns centered on and around the concept of nature and the natural world, provides the other, and it is to these phenomena we now turn with a similar intent of providing the ground upon which our later explorations will stand. As with vitalism, I am most interested in specific—and relatively recent—manifestations of religion in North America, and in specific interpretive perspectives as well. This chapter opens with a theoretical overview designed to clarify the tradition from which I am writing, followed by broad historical tracings of natural religion in North America, focusing on the period from initial contact between the indigenous population and Europeans to the middle of the nineteenth century, setting the stage for the subjects that follow in the rest of the thesis. I see this chapter as existing in an ongoing

series of interactions with the first: the interplay and exchange between the work of scholars engaged in an archaeology of ideas and those working within the history of religions as a tradition constantly inform, support, and argue with each other in my own scholarship.

Religious History and the History of Religions

We would do better to do what we do, which is to attempt to make sense of other people's religions, even if we do so in the certain knowledge that everything we say and write is provisional and condemned to revision if not ridicule by future generations, as well as by our own proximate and distant others.

In practical terms, this means that we need not feel ourselves compelled to front-load our own discussions with deconstructions of all who have preceded us on our path.

David Gordon White, *The Scholar As Mythographer*

Not for the last time, a diversion must be taken to clarify what is meant by a term presented for consideration: here, I need to identify an important distinction between the history of religions as a generic term encompassing the unfolding of human behavior through time and as a referent to a specific way of approaching the multitudinous artifacts left behind by that behavior. The latter, which is explicitly concerned with how those remnants are held in comparison, is the scholarly tradition in which I am most deeply trained. It may be said that the roots of the comparative study of religion trace back to the late nineteenth century when, paraphrasing Goethe's remark on languages, Max Müller said in a lecture, "the same applies to religion. *He who knows one, knows none.*" (Müller

1872, 11) This, like all creation stories, is almost surely apocryphal, and the search for comparative understanding must date back to the first time someone said “what are those people over there *doing?*” This has led to a long and troubled history, mixing an early tendency to conflate anything foreign or different from our own experiences into a vast, savage, erotic other that cried out for conquest and assimilation to a later one to decry any act of comparison at all as exactly that type of violence combined with an insistence that anything that even vaguely smelled of religion was “really” something else: the product of economic pressures or an outbreak of a medical condition or an act of rebellion by an oppressed group of individuals, “anything but worldviews so powerful that they had far more influence on how people thought and acted than did the immediate, perceptible physical world.” (Patton 2000, 164)

In the more specific use of the term, the history of religions is probably best dated as a quite recent phenomenon, beginning with the “Chicago School” of Joachim Wach, Charles Long, Mircea Eliade, and Joseph Kitagawa. Continuing first through their direct progeny at the University of Chicago, then, as their intellectual lineages spread and dispersed, creating tribal variants and offshoots, odd marriages and bitter divorces, the general umbrella of history of religions dominated academic practice in the field, either directly or in reactive critique, for the second half of the twentieth century and into the twenty-first. In order to better situate my own position vis-à-vis the history of religions and to hopefully clarify why I would insist—over and against some very strong voices—that comparison still matters, I will briefly trace the development of the field as a comparative discipline, using Kitagawa as an early representative before moving to an examination of

the views of, on the one hand, contemporary polemicists represented by Robert Segal and Russell McCutcheon and, on the other, the response of Wendy Doniger to such attacks. This section will close with reflections informed by J. Z. Smith and Clifford Geertz as to the current status of the field, as well as to my place within it. While I am aware that the history of religions continues to be a dominant force at the University of Chicago to this day, I will use the term “Chicago School” explicitly to refer to the first generation of scholars under consideration.

Kitagawa may be seen as an odd choice to represent the Chicago School, with most preferring either the towering figure of Mircea Eliade—who we have already met in the previous chapter—or that of Joachim Wach. I would say that, precisely because he was not either the dominant, visionary scholar (Eliade) or the provider of the initial theoretical and philosophical underpinnings (Wach), Kitagawa will serve our purposes quite well in terms of providing insight into how comparison functioned for this group in the mechanics of their scholarship. In this, I am drawing heavily on Twiss and Conser’s work on the phenomenology of the history of religions in which they divide the field into three positions, the essentialist, the historico-typological, and the hermeneutic-existentialist. (See their introduction in Twiss and Conser, Jr. 1992 for an exhaustive typology.) Twiss and Conser’s focus is on phenomenology as a whole, but the material included in *The Experience of the Sacred* is both explicitly religious and dominated by either members of The Chicago School or those heavily engaged in conversation with its legacy. The Chicago School provides the model *par excellence* of the historico-typological approach, where the concern is to provide what could be called diagrammatic guides to the study of religion:

phenomena is categorized, related to other categories, differentiated through the presence or absence of various sub-categories, and seen in the context of a global and trans-historical network of religious practice and belief. As such, typological groupings move to the forefront of consideration: we are concerned with major symbols, identifiable movements, and variants that are used to confirm the presence of a core, repeated and repeatable pattern. Clearly, comparison is central here: the only reason for the construction of such a complex grid is to place various phenomena *in relation to each other*.

This represents a major turn from the initial essentialists, whose focus was on the content of religion, on the very *essence* of ritual and practice, a target whose existence was unquestioned. That is, there was assumed to be a there, there: religion had a central content, a unifying set of conditions, that could be analyzed, explicated, and described, if not fully apprehended or understood. While not denying that essence—indeed, in many cases, the category of the sacred itself was used as the central organizing trope—the historico-typologists shifted their attention to cataloging the ways in which the sacred was made manifest, and the ways in which human cultures attempted to engage with it. As such, Kitagawa’s essay “Three Types of Pilgrimage in Japan” may be seen as representative; here, in scarcely a dozen pages, Kitagawa examines many manifestations of pilgrimage, arriving at three different subcategories that vary based on the goal of the pilgrimage and upon an examination of the relationship between the pilgrim and the venerated object. Kitagawa is well aware of both the importance and pitfalls of the comparative project, writing that

To be sure, it is the task of the historian of religions to delineate universal structures out of the multitude of varied and variable religious data and to

telescope long and complex histories of religions by depicting certain significant events and their persistent characteristics. Yet, his conceptions and abstractions must be constantly re-examined in the light of the integrity and the unique cluster of meanings of particular religious systems or phenomena. (Kitagawa 1967a, 178)

In the end, his goal is to use “a significant form of religious cult which has developed out of the fusion of various elements,” as a way to create a useful categorical grid that may, on one side, “throw some light on the characteristic pieties of Japanese religious tradition” (Kitagawa 1967a, 187) and, on the other, provide another small tool in the greater classificatory project.

There is something essentially encyclopedic about the Chicago School, a subtext that seems to insist that, if we can just catalog all of the instances and variations of religious behavior and experience, we will then have enough data. I would claim that it is never quite clear exactly what the goal of the accumulation of this data is—greater understanding, surely, but what else? What else is contained, or hidden beneath, the effort to create this massive system of interrelated structures and manifestations? This is the point where several critics rush in to accuse the Chicago School, and especially Eliade, of pushing a pseudo-Christian or pseudo-Fascist agenda. While those claims may be overstated, I would echo Hugh Urban’s call in his response to Wasserstrom’s *Religion After Religion* for a greater examination of the parallel between the politics of the Cold War and those of the Chicago School (Urban 2001) as well as draw attention to what should be obvious parallels in other examinations of the impacts of the construction of grids of knowledge and power. Situating oneself in the tradition of the history of religions does not mean losing sight of Foucault.

Still, at this point I would rather claim that, for the early founders and practitioners

within the Chicago School, the method may very well have been the ends itself, without a consciously sinister dimension to their work. In spite of its dominance (or, more likely, because of it), the Chicago School has not been accepted uncritically; and debates surrounding the original founders of the field, its methodology, and possible alternatives have raged quite loudly for the last quarter century. These debates have led to strange bedfellows on all sides, with similar arguments being offered by scholars who otherwise are in deep disagreement about the proper philosophical orientation of the field. It has also been marked by an opening of the history of religions to the impact of other disciplines, most notably anthropology and the social sciences, and these interventions are, to me, a key component in moving forward. Before that a review of the basic charges is in order; this will be done quite quickly: entering the second decade of the twenty-first century, these are old arguments, and much of their fire has burned out. This does nothing to lessen their importance or impact, but it does deflate some of the passionate zealotry that marked the debates in the 1980s and 1990s.

The attack on comparison hinges on various manifestations of *inequality*, operating on several different, interrelated levels. First, there is the imbalance between the relative strength of cultures, seen either as a manifestation of Western imperialism, or as a glorification of the *Other* (indigenous, foreign) as a corrective to the malaise of the modern West. The gist is that nothing can be compared equally, that there is always dominance and, hence, oppression in comparison, and that comparison itself does a sort of violence to the object compared. Second, there is the bias of the scholar, which manifests most clearly in the selection of objects to compare. We see what we want to see, and therefore we select

objects that fit whatever our hypothesis or hidden agenda may be. More insidiously, we may not even be aware of those agendas, controlled as we are by unconscious agents (and, again, by the drive towards hegemony that is unavoidable in western scholars). Or, more distantly, the scholar may be driven by an initial hypothesis (for example, the existence of a real experiential state described by “the sacred”), leading to both bias in selection, but also to intentional and accidental misrepresentations and misinterpretations of data.

Finally, there is an inequality of voice, seen either as the forced surrender of power that occurs when scholars decide upon categorization schemes without sufficient attention to the “native” description of the phenomena involved or, more philosophically and less politically, seen as the impossibility of comparison itself due to the inability of two individuals to agree fully on the meaning of any independent third term, especially and most problematically when issues of belief, faith, and understanding emerge. (The classic outline is found in MacIntyre 1964.). This last argument is often used to highlight the ways in which the Chicago School is obsessed with similarity, at the cost of difference; that is, in the quest to catalog what is the same, they are blind and/or deaf to moments of deep and profound difference. This critique is not without significant merit and is perhaps dealt with most eloquently in Tomoko Masuzawa’s *In Search of Dreamtime*, specifically in her treatment of the “discovery” by a western female anthropologist of the ways in which Aboriginal women in Australia partake in the dreamtime, hitherto seen by scholars—who only spoke to men—as an exclusively male affair. (Masuzawa 1993)

Notice that we’re already hopelessly muddled: the same scholars who would argue strongly against the role of bias due to a pre-existing conviction (say, McCutcheon’s

attacks on Eliade) also insist that scholars never relinquish their right to pass judgment on the religious practices of others. Typically, though, the argument takes one of two forms: the first is the pure polemic of McCutcheon or Segal, where the opposition is caricatured and ridiculed into submission. Here, the Chicago School are presented as a marauding group of frauds, spreading cults of personality and irresponsible scholarship in their wake (Segal 1983; McCutcheon 1999; McCutcheon 2001; Segal 2001; McCutcheon 2006). I refuse to wade into these waters: the substance of the attacks are slim, and the noise surrounding them disproportionate. For a convincing rebuttal of their arguments, see in the specific, Bryan Rennie's *Reconstructing Eliade* (1996) or, in a more general sense, the entire corpus of Jeffrey Kripal, Wendy Doniger, or any other of a number of the generational descendants of the Chicago School. I mean that quite seriously: the existence of such rich and nuanced scholarship is, in itself, an argument against the dismissal of the entire project.

The second objection is a postmodern critique usually situated in the disparate power between scholar and subject and, while more nuanced than the polemic, equally reductive in its outcome. The power of the postmodern critique is immense, and is seen directly in the re-emergence of area studies in the 1980s and 1990s as the dominant organizing factor within the field of religious studies. The force of this argument is nicely summarized by David Gordon White as follows, taking Eliade as representative of the Chicago School as a whole:

Eliade was constructing his own White Man's metanarrative, and the unmasking of such metanarratives is what much of postmodernism is about. This is at the heart of Jean-François Lyotard's critique of modernism, of "totalizing metanarratives, great codes which in their abstraction deny the specificity of the local and traduce

in it the interests of a global homogeneity, a universal history. Such metanarratives would include Marx's historicist narrative of emancipation, the narrative of psychoanalytic therapy and redemption proposed by Freud, the story of constant development and adaptation proposed by Darwin," as well as, we might add, the theories of myth and religion offered by the likes of Frazer, Eliade, and Lévi-Strauss (even if structuralism itself belongs to an early phase of postmodernism).

Now, if we follow Lyotard's argument to its conclusions, as some postmodernists have done, we find ourselves forced to grapple with the question of the legitimacy of conducting comparative studies of culture, societies, or religions, that is, of pursuing the discipline of the history of religions as it has been constituted over the past century. This argument runs as follows: modernist metanarratives, in order to accommodate widely diverging local histories and traditions, abstract the meaning of those traditions by way of a "translation" into the terms of a master code, which leaves the specific tradition simply unrecognizable. Such metanarratives also become coercive and normative: they systematically control and distort the local under the sign of the universal. Such a drive to totality cannot respect the specificities of the genuinely heterogeneous traditions. (D. G. White 2000, 48–9)

Let me pause a second to moment to underscore what is at stake here. If *either* of these critiques hold—the polemic or the postmodern—the entire field of the comparative study of religion collapses into rubble and dust.

That said, if I saw these objections as fatal to the study at hand, this would be a slimmer thesis. Having clearly outlined the argument, the power of White's analysis lies in his response. Upon re-reading what is perhaps the high-water mark of the Chicago School, *The History of Religions: Essays in Methodology*, edited by Eliade and Kitagawa and published in 1959, White is struck that,

some forty years after its publication, that collective effort appears more as a period piece than a landmark, quite nearly as antiquated in its Enlightenment presuppositions or Romantic agendas as the earlier works of Frazer, Freud, and Max Müller. In a word, this is a modernist document, the mere reading of which should suffice to alert us to the fact that ours are postmodernist methodologies, and have been so for a good many years. (D. G. White 2000, 47)

He continues, "the postmodernist critique of modernist metanarratives is pretty much a dead horse as the millennium draws to a close. If we are talking about contemporary

Western scholarship—on art, architecture, law, literature, economics, politics, society, and yes, even religion—the postmodern message has been received and acted upon.” (D. G. White 2000, 49) Wendy Doniger, who we will visit with more below, would never be described as a deeply postmodern theorist, yet her work sits clearly on the near side of what White describes. Even if, as an Indologist, Doniger’s encounters—like Kripal’s—are more with the postcolonial than the postmodern, the form and structure of the critique is similar and overlapping:

But there is also much in the postcolonial critique that is worth keeping; indeed, we can no longer think without it. We are aware, willy-nilly, of how our texts have come to us; they now say to us, like third-world immigrants in England, “We’re here because you were there.” Colonialism is no longer the political force it once was, but it is still here, especially if we use a word like imperialism instead of colonialism and bear in mind the aspects of our scholarship that still invade the countries we study, like the Coke bottle that intrudes into the lives of The Natives in the (racist) film *The Gods Must Be Crazy*. In particular, the postcolonial critique has made us aware of how deeply evolutionist ideas are embedded in the history of comparison, and how hard we must work to overcome them. (Doniger 1998, 69)

While I would never claim to be *beyond* the concerns raised by postmodernism, I would say that many of the current generation of scholars have held those concerns front and center from the beginning of their intellectual training, and that many of our allies from prior generations have embraced and ingested those same concerns. We may always have been modern, but we are, now twenty years further on from White’s writing, always already postmodern as well.

Doniger’s position warrants further attention. In *The Implied Spider*, she looks the various critiques of the history of religions in the eye and simply, an eyebrow arched inquisitively, asks, “... *and?*” That is, Doniger admits to the dangers of all of the above; however she also insists on the necessity of wading into the shark-infested waters if we

desire to swim away from the sheltered bay of theology. It is, according to Doniger, *only* through comparison that we can make sense of religious material beyond the tight boundaries of belief. This is, admittedly, an argument heavily influenced by her own focus on myth; Doniger describes her field as “a sub-caste of historians of religion, more precisely a half-caste formed through an illicit liaison between anthropologists and classicists.” (Doniger O’Flaherty 1986, 335) Her solution is both complex and direct: the only choice is to dive in, to surround oneself with variant upon variant of a theme, and to slowly and carefully sort through them, paying attention to the nuanced shifts in emphasis and structure between them.

We cannot, to borrow the Zen koan, hear the sound of one hand clapping; we cannot hear sameness. But through the comparative method we can see the blinkers that each culture constructs for its retellings of myths. Comparison makes it possible for us literally to *cross-examine* cultures by using a myth from one culture to reveal to us what is *not* in a telling from another culture, to find out things not “dreamt of in your philosophy” (as Hamlet said to Horatio). Moreover, we can use comparative work to test theories about our own culture, by noting where our own dogs have not barked. Comparison defamiliarizes what we take for granted. We can only see the inflections of a particular telling when we see other variants. (Doniger 1998, 33–4)

This comparative work produces a network of connections, Doniger’s web emerging, along which the (implied and scholarly) spider can start to move. Importantly, there is no claim of over-arching meaning here: the web does *not* have a single dominant strand. This is the basis for her call for a “bottom-up” methodology, as opposed to the prior insistence on viewing religious data from the top down (that is, starting with a broad category—say, pilgrimage—and moving through the available examples, refining the structural classification as you go). Rather, there is a network of connections, and the challenge to the scholar is to find ones that are interesting, illuminating, even important. In one sense,

Doniger dismisses many of the arguments as being ones of competency: the better the scholar, the more careful they are, the deeper and broader the intellectual base from which they draw, the more honed and clearer their instincts, the less likely they are to make the mistakes of bias listed above.

Overcoming Sympathy through Thickness

The question of ultimate meaning can be raised at any time and at any occasion—but not all the time.

Niklas Luhmann, *Essays on Self-Reference*

This issue of competency leads me finally to the work of J. Z. Smith and Clifford Geertz, a somewhat unlikely coupling, but one that neatly pulls together the two strands of my scholarly training. Smith is somewhat responsible for the tempest surrounding the history of religions as a whole, as his essay “In Comparison A Magic Dwells” is still seen as a classic attack on the status of the field, the crux of which is this paragraph:

It requires but a small leap to relate these considerations of the Laws of Association in memory and magic to the enterprise of comparison in the human sciences. For, as practiced by scholarship, *comparison has been chiefly an affair of the recollection of similarity. The chief explanation for the significance of comparison has been contiguity.* The procedure is homeopathic. The theory is built on contagion. The issue of difference has been all but forgotten. (Smith 1982, 25–6)

For Smith, comparative work, the underlying foundation of the field itself, for all its scholarly dressing, operates much like Frazer’s sympathetic magic: things that were somehow declared to be alike were said to share in some inexplicable essence that gave

them an unseen quality of power. This is a brilliant insight, and one that pulls together much of my own investment in the field: the structure of magic, the dangerous notion of purity, the perils of scholarship when faced with such a seductive subject. In examining the state of the field, “four basic modes or styles of comparison were isolated: the ethnographic, the encyclopaedic, the morphological, and the evolutionary,” (Smith 1982, 27) with the Chicago School most often mapping to the encyclopaedic and the morphological. Smith summarizes:

We stand before a considerable embarrassment. Of the four chief modes of comparison in the human sciences, two, the ethnographic and the encyclopaedic, are in principle inadequate as comparative activities, although both have other important and legitimate functions. The evolutionary would be capable in principle of being formulated in a satisfactory manner, but I know of no instances of its thorough application to cultural phenomena. What is often understood to be the evolutionary method of comparison embodies a deep contradiction which necessitates its abandonment. This leaves only the morphological, carried over with marked success from the biological to the cultural by O. Spengler, and which has a massive exemplar in religious studies in the work of M. Eliade, whose endeavor is thoroughly morphological in both presuppositions and technical vocabulary, even though, in specific instances, its principles of comparison remain unnecessarily obscure. Yet, few students of religion would be attracted by this alternative. Because of the Romantic, Neoplatonic Idealism of its philosophical presuppositions, because for methodologically rigorous and internally defensible reasons, it is designed to exclude the historical. The only option appears to be no option at all. (Smith 1982, 29)

Note that the situation is even more dire if you accept—as, at the end of the day, I do—that postmodernism writ large has pretty much demolished the foundations of the morphological.

Doniger and Smith are, ultimately, bemoaning depth and quality. They are expressing a longing for scholarship that reaches beneath the surface, and that struggles with the complexity demanded by the subject.

There is nothing easier than the making of patterns; from planaria to babies, it is done with little apparent difficulty. But the “how” and the “why” and, above all, the “so what” remain most refractory. These matters will not be resolved by new or increased data. In many respects, we already have too much. It is a problem to be solved by theories and reasons, of which we have had too little. So we are left with the question, “How am I to apply what the one thing shows me to the case of the two things?” The possibility of the study of religion depends on its answer. (Smith 1982, 41)

Smith’s answer to this challenge—exemplified in his own work—is one of careful and considered scholarship, of simultaneous attention to the methodology employed and the subject matter under consideration, and of a constant denial of essential, reductive categories. But his core question is also a reef where other disciplines—notably anthropology—have already run aground, and have already proposed a variety of techniques to find again the open sea. In this vein, Smith and Doniger may be seen as demanding of the history of religions an honest implementation of Clifford Geertz’ “thick description.”

Geertz sees a challenge similar to that eyed by Smith, but in a different register:

In short, we need to look for systematic relationships among diverse phenomena, not for substantive identities among similar ones. And to do that with any effectiveness, we need to replace the “stratigraphic” conception of the relations between the various aspects of human existence with a synthetic one; that is, one in which biological, psychological, sociological, and cultural factors can be treated as variables within unitary systems of analysis. (Geertz 1973, 44)

But the only way to get there is an echo of Doniger’s concern for working from the bottom up. “The aim is to draw large conclusions from small, but very densely textured facts; to support broad assertions about the role of culture in the construction of collective life by engaging them exactly with complex specifics.” (Geertz 1973, 28) This is difficult, arduous, confusing, and disorienting work. But it

is not as fatal as it sounds, for, in fact, not all Cretans are liars, and it is not necessary to know everything in order to understand something. But it does make the view of anthropological analysis as the conceptual manipulation of discovered facts, a logical reconstruction of a mere reality, seem rather lame. To set forth symmetrical crystals of significance, purified of the material complexity in which they were located, and then attribute their existence to autogenous principles of order, universal properties of the human mind, or *vas, a priori weltanschauungen*, is to pretend a science that does not exist and imagine a reality that cannot be found. Cultural analysis is (or should be) guessing at meanings, assessing the guesses, and drawing explanatory conclusions from the better guesses, not discovering the Continent of Meaning and mapping out its bodiless landscape. (Geertz 1973, 20)

Robert Segal attacks Geertz on the very issue of comparison, claiming to have found the magic bullet of polemicists—inconsistency—in Geertz’ simultaneous disavowal and usage of comparison. In doing so, he confuses some core conditions of Geertz’ thought, most importantly, the central location of comparison itself. Geertz would insist that not only can comparative work be done well, in a way that illuminates each term under consideration, but that it is, in a sense, the second movement of a scholarly exploration of religious phenomenon. The first movement is the aforementioned thick description: a detailed, complex, multi-vocal and multi-perspectival examination of the event under consideration—and here we have moved from Doniger’s textual realm to that of the field anthropologist: ritual, personal interaction, embodied movement. Thick description not only provides a clear image of what occurred, but also offers emic interpretations from multiple vantage points, along with sufficient background (social, political, historical, linguistic) to embed those vantage points in meaningful and inter-related contexts. This is done, though, with an eye towards interpretation, and interpretation is always—and must be—a comparative venture, one that brings the knowledge surfaced into conversation, or, at least, co-existence, with other similarly complex and contoured bodies of knowledge. So, for example, Geertz discusses the location of the social self *across* the three locations

of his field work (Java, Bali, Morocco) by describing each of the three in detail before moving on to some conclusions reached by holding them loosely in contrast to each other.

Geertz does at times indeed deny the possibility of comparison, but (and this is a distinction lost on Segal) this is an expression of his frustration at a lack of attention to the definition of the object compared. That is, Geertz (and Smith, and Doniger) would rightfully cringe at facile attempts to compare Islam and Judaism, as if those two nouns referred to something concrete and isolatable. Each, however, would insist on the ability to compare a specific manifestation of Islam, carefully delineated in its historical context, with a similar moment of Judaism; indeed, much of their work is comprised of exactly this type of exercise. One would expect that even J. Z. Smith would nod in agreement at the close of Geertz' "Thick Description: Towards an Interpretive Theory of Culture," where he notes that "the essential vocation of interpretive anthropology is not to answer our deepest questions, but to make available to us answers that others, guarding other sheep in other valleys, have given, and thus to include them in the consultable record of what man has said." (Geertz 1973, 30)

Three essays further on in *The Interpretation of Cultures*, Geertz provides his definition of religion, and if only it sufficed, there would be a natural bridge between what precedes and what comes after. The fact that it does not should not reflect poorly on Geertz: there seems to be something fundamentally inimical between religion and the act of defining. Certainly, definitions in general are tricky things, and definitions of religion and its various related terms—mysticism, spirituality, religious experience and the like—doubly so, suffering as they do from what Cupitt terms "a heavy freight of modernist

ideology.” (Cupitt 1998, 12) There is the general categorical issue where such work presents itself as objective and neutral, yet never is, a concern greatly compounded by the specific power carried by discussions of religion. More specifically, even scholarly attempts to wrangle the term seem to vacillate from positions so broad as to admit almost any behavior or belief to stances that reveal an all too common pattern of defining religion as the familiar; that is, recognizing as religious those cultural forms that are compatible in structure (if not in content) to our own. As J. Z. Smith states in his summary of the history of the term, “the most common form of classifying religions, found both in native categories and in scholarly literature, is dualistic and can be reduced, regardless of what differentium is employed, to ‘theirs’ and ‘ours.’” (Smith 1998, 276) Indeed, Smith’s penultimate sentence in the conclusion to his essay *Religion, Religions, Religious* provide a very useful summary of the term:

“Religion” is not a native term; it is a term created by scholars for their intellectual purposes and therefore is theirs to define. It is a second-order, generic concept that plays the same role in establishing a disciplinary horizon that a concept such as “language” plays in linguistics or “culture” plays in anthropology. (Smith 1998, 281–2)

These two quotes from Smith illustrate a further doubling: the religion of “theirs” and “ours,” the religion referred by the historical pronouncements regarding “the one true religion,” reflect a commonplace utility and a historical narrative surrounding the term stretching back in European history for hundreds of years. This is the first fold of a concept, and it is highly specific, resisting attempts to broaden it as wide as the notion of “category.”

But Smith is pointing towards something else, towards a recognition that religion,

as an external and abstract category, is a term imposed from the outside, traditionally by those engaged in explorations draped in scholarly garb (whether within traditional academic structures or not). This becomes even more apparent when the plural *religions* is encountered. One reaction to this situation is to dismiss the term entirely from a scholarly perspective—that is, if there is no object behind the term, no clear and stable referent to which it points, there can be no study of it and, indeed, this line of thought has given significant voice to a claim that the study of religion is actually a non-discipline, and that its practitioners are “really” doing the work of historians or anthropologists or linguists, work that is more properly done within the boundaries of other, “more legitimate” academic disciplines. This is not, however, Smith’s conclusion: instead, he follows the above definition by claiming that “there can be no disciplined study of religion without such a horizon.” (Smith 1998, 282) In other words, it is the (dare we say, sacred) duty of the scholar to establish the horizons of their work, and to do so with discipline, with rigor in their examination of the variety of activities, beliefs, truth claims, and interactions that may fall under the rubric, howsoever it is defined. In this way, and with an explicit nod to Smith’s *Map Is Not the Territory*, religion becomes a cartographic term, a notion that establishes the known boundaries of an area to be explored.

While recognizing the weight of Smith’s demand, I will refrain from producing an original definition myself: this may indeed make me undisciplined in my study of religion, but I have always been suspicious of discipline, especially in its close relationship to punishment. Perhaps more importantly, it is not *religion* that concerns me most, but rather *religious behavior*. The complication of the term remains, however, as it is insufficient to

require an agent to see their own behavior in this way: that is, some of the figures we will encounter in the following chapters would deny their being religious at all, and would bridle at the use of the term. This is where anthropological training comes in handy: the subjects of our investigations are not required to agree with our interpretations. Still, Smith tugs at me, and to quiet his insistent voice, I offer a definition of his own (again, with apologies for his dated gendering):

What we study when we study religion is one mode of constructing worlds of meaning, worlds within which men find themselves and in which they choose to dwell. What we study is the passion and drama of man discovering the truth of what it is to be human. History is the framework within whose perimeter those human expressions, activities and intentionalities that we call “religious” occur. Religion is the quest, within the bounds of the human, historical condition, for the power to manipulate and negotiate ones ‘situation’ so as to have ‘space’ in which to meaningfully dwell. It is the power to relate ones domain to the plurality of environmental and social spheres in such a way as to guarantee the conviction that ones existence ‘matters.’ Religion is a distinctive mode of human creativity, a creativity which both discovers limits and creates limits for humane existence. What we study when we study religion is the variety of attempts to map, construct and inhabit such positions of power through the use of myths, rituals and experiences of transformation. (Smith 1978, 290–1)

If there is a common thread that runs through the variety of religious moments explored in this thesis, it centers around the notion of *yearning*, of an embodied longing for something that resides outside the pale of everyday experience, recalling Bataille’s claim that the essence of religion “is the search for lost intimacy,” (Bataille 1992, 57) as well as the previous chapter’s discussion of Eliade. The individuals and groups that we will encounter are searching for something, but they are doing so, for the most part, in direct engagement with their surroundings, eschewing both ascetic isolation and the dizzying worlds of abstract consideration: ecstasy is found neither in an abandoned cave nor in frenzied recombinations of the letters that form the name of God; it is, instead, located *out*

there, in the walkable world. This is not a new notion by any means, nor is it one that is unconsidered in the history of religions.

An American Metaphysics

The universe was folded in upon itself: the earth echoing the sky, faces seeing themselves reflected in the stars, and plants holding within their stems the secrets that were of use to man.

Michel Foucault, *The Order of Things*

The work of Catherine Albanese, culminating in her magnum opus *A Republic of Mind and Spirit: A Cultural History of American Metaphysical Religion*, has long been focused on tracing the histories of the intersections between the natural world and religion in the West. This chapter is particularly indebted to her work, both in its specific content and in her insistence on the validity of what she terms the “metaphysical” traditions as objects of academic inquiry. Albanese’s metaphysical traditions—she is quite aware of the difficulties of the term, and discusses them at some length (Albanese 2007, 6–16)—encompass a wider scope than what interests me here; however, each of the subjects in the following chapters could be construed as being a part of her lineage, and as such, it is worth some time to consider in detail how she defines the tradition, especially as it will also highlight where my focus differs from hers. For Albanese, these religious practices rely

on an individual’s experience of “mind” (instead of “heart,” as in evangelicalism). In this context, metaphysical forms of religion have privileged the mind in forms that include reason but move beyond it to intuition, clairvoyance, and its relatives

such as “revelation” and “higher guidance.” Here versions of a theory of correspondence between worlds prevail. The human world and mind replicate—either ideally, formerly, or actually—a larger, often more whole and integrated universe, so that the material world is organically linked to a spiritual one. In this version of “as above, so below,” metaphysicians find a stream of energy flowing from above to below—so powerful and constitutive of their reality that they discover themselves to be, in some sense, made of the same “stuff.” If there are differences, they are of degree and not of kind. Moreover, the influx of energy (let us now call it “divine”) that enlivens their world is a healing salve for its ills and—in the strongest statement of their view—renders them divine and limitless. For metaphysicians, religious change may happen either suddenly or gradually, and practice arises organically out of these beliefs about correspondence, resemblance, and connection. Ritual thus involves enacted metaphors. To put this another way, metaphysical practice is about what may be called magic, and magic—defined in the way that I do here—lies at the heart of American metaphysics. Thus, noticeably more than the denominationalist who also does ritual, the metaphysician brings its willed instrumental quality to the fore. Still further, for the magical believer the trained and controlled human imagination brings one part of the world—one symbolic form, if you will—to operate or act on other “pieces.” In the eyes of the believer, such activity is an effective way to bring desired and seemingly miraculous change. (Albanese 2007, 6–7)

I have included the beginning of Albanese’s definition to highlight a key difference that emerges in the work that follows: for Albanese, these movements are focused primarily on the mind, on mental projection, and on the powers of thought. The particular subset of her metaphysical tradition that I focus on, while having clear affiliations with this imaginal tendency, is also quite consciously uncomfortable with it and throughout the material we find a concern with and a validation of the body, the flesh, the physical. While in the end this difference is critical for understanding these movements, and may contain what is in fact the fulcrum around which the relationship between our imagined selves and the external world turns, for now it is best held in abeyance. Instead, three key tropes from Albanese’s quote emerge that we will encounter again and again in this material.

First, there is a process of reflection, whereby meaning is produced through an active engagement with the external world. At times, this may appear as a classic “reading

of the world as text,” subject to all of the critique, largely along gender lines, that implies. There is more here than that, though: for many of the “natural metaphysicians,” to adapt Albanese’s category to our concerns, the world is in fact not passive, but rather quite active and, as such, available for acts of co-creation. This is present in ways small and large, from the recognition that external forces are unpredictable and uncontrollable to the core definition of magic offered in a quote that has become ubiquitous within neopaganism (and in many related arenas of thought) where magic is defined as “the art of changing consciousness at will.” (Starhawk 1979, 13) At their core, these movements represent a struggle to shift away from the variety of anthropocentric views that dominate the history of western religious discourse. As we will see, this struggle is not always successful, is certainly not always a conscious goal of the practitioners, and contains many small movements to and fro across the spectrum of interpretive possibilities. Underlying this is the claim that truth—however constructed and validated—is created, not discovered; it emerges as a discourse between the magician and her environment, a product of both her desire and the responsiveness to that desire of the larger forces at work.

Secondly, the natural metaphysician occupies what is, at core, a monistic world. While often obscured by various obstacles that must be worked through or separations that must be overcome in order to experience the core unity of all things, the monism remains present, offering a unity of matter with which the magician may merge or, at least, of which the magician may partake. This monism may manifest in many ways, from the classic reliance on an underlying deistic being for its justification where all is one either because God made it so or because of an identification of all materiality being in fact God

herself to statements concerning the natural inter-connectedness of all beings to the inter-relatedness of disparate matter in various spiritual regurgitations of quantum theory.

Regardless of form, “religious naturalism, in effect, is often the message in the metaphysical world ... Mind and world are the givens with which one must work in the here and now: all of reality is made of the same cosmic material, and therefore all is ‘natural.’” (Albanese 2007, 7) Importantly, this does not deny the presence of various claims of an “other” spiritual world, or of the possibility of being “reborn” into a new state: rather, it is an observation of what totality encompasses those worlds and states.

Metaphysicians are not reborn into an eternal afterlife, separate and distinct from their current existence; instead, they are reborn in the current world, albeit with claims to greater understanding or greatly expanded forms of consciousness.

Finally, we are in the realm of energy as a fluid, of metaphors of hydraulics and flow. Although relatively simplistic sentiments confirming that “the only constant is change” and the like are certainly found, this fluidity extends to epistemological concerns as well: while there are some notable exceptions, natural metaphysicians tend to embrace the possibility of a plurality of truths, a multiplicity of world views that may provide insight into the ultimate nature of the universe. Given the monism described above, this generally takes an “all roads lead to Rome” form, where there are many paths to a single truth, a structure that can certainly prove problematic, not least of all because of its often unconsidered implications. It is also perhaps this comfort with fluidity that makes these traditions at times highly elusive. While Albanese’s metaphysicians—let alone the smaller subset we are focused on—have never been the dominant force in the religious history of

America, they have always been present and often highly visible. This is a minority tradition, not a fringe one; but it is also one that is often found in unexpected places, adapting itself to unfamiliar surroundings with surprising ease. As such, “tradition” may be the wrong term: we are looking at a set of core ideas, figures of thought, that have persisted for centuries in the West, but not within a single sect or religious community.

The general intellectual history of these ideas, from classical antiquity through the Renaissance and into the Enlightenment, has already been laid out with greater skill than I possess (Among many others: James 1902; Eliade 1959; Kitagawa 1967b; Eliade 1969; Foucault 1970; Asad 1993; Faivre 1994; Doniger 1998; Hanegraaff 1998a; Partridge 2004; Albanese 2007) and the general trajectory is well established. As with all such things there is no real beginning—Albanese starts (following Hanegraaff) with Marsilio Ficino’s translation of the *Corpus Hermeticum* in the mid fifteenth century; Asad with traditions of torture in Medieval Christianity; Foucault most famously with Velázquez’ *Las Meninas*, painted in 1656. This is a natural condition for a historian of religion, as J. Z. Smith demonstrates in a passage whose gendered exclusion should not obscure its insights:

The philosopher has the possibility of exclaiming with Archimedes: “Give me a place to stand on and I will move the world.” The quest for this place finds paradigmatic expression in the almost initiatory scenario of Descartes *dans un poêle*. There is, for such a thinker, at least the possibility of a real beginning, even of achieving *the Beginning*, a standpoint from which all things flow, a standpoint from which he has clear vision. The historian or the historian of religions has no such possibility. There are no places on which he might stand apart from the messiness of the given world. There is for him no real beginning, but only the plunge which he takes at some arbitrary point to avoid the unhappy alternatives of infinite regress or silence. His standpoint is not discovered; rather it is erected with no claim beyond that of sheer survival. The historian’s point of view cannot sustain clear vision.

The historian’s task is to complicate, not to clarify. He strives to celebrate the diversity of manners, the opacity of things, the variety of species. He is barred,

thereby, from making a frontal assault on his topic. Like the pilgrim, the historian is obligated to approach his subject obliquely. He must circumambulate the spot several times before making even the most fleeting contact. (Smith 1978, 129)

For our purposes, the important realization is that the roots of Albanese's metaphysics—and hence, our metaphysics of nature—run deep, and are tangled together with the same religious impulses that have landed people on the shores of North America for centuries, a situation that Albanese nicely summarizes in the opening of *A Republic of Mind and Spirit*:

American metaphysics is a combinative venture with beginnings in numerous places and times. Some of its sources were products of the nineteenth century and—for twentieth-century and later versions—thereafter, but others arrived earlier. The oldest legacies were culturally available in certain forms on American shores in the seventeenth century, and it is these sources that had the first say on what became the tradition. The classical and Hellenistic Greco-Roman world (which included northern Egypt), behind and beside it the Near East, later medieval Christian, Jewish, and synthetic lores and practices, Renaissance and continuing religious scholarship and experiment, a series of European folk traditions, their English equivalents, an English Elizabethan high cultural inheritance, Native American narratological traditions and ceremonial work, African American versions of the same—all came together in the British North Atlantic colonies that later became the United States. Later, West Coast southwestern, and Mississippi Gulf inhabitants, and even Sandwich-Islanders-become-Hawaiians would add their materials. So, of course, would Asians, and so would a series of others whose “influences” became so many and various that a kaleidoscope of sources emerged. Indeed, its tangled contents defy isolation and separate identification. (Albanese 2007, 21)

I stress this point because many of these movements see themselves as new, as harbingers of some original revelation heretofore unrevealed to the world—or, at least, as possessors of some new type of insight into the relationship between humanity (or, all too often, *man*) and its environs. This new insight is often shrouded, through a temporal sleight-of-hand, in ancient roots; as an example, neopaganism often presents itself as skipping right over several millennia, harkening back to even older, suppressed and forgotten religious movements. This move highlights the fact that these movements' relationship to history

itself is an intriguing question, and one to which we shall return below.

While our interests are slanted quite heavily towards more recent history, we cannot totally ignore the first centuries of colonial presence in North America, a time dominated for our purposes by two separate occurrences. The first is the often (yet not always) brutally violent interactions between Europeans and both the indigenous populations and those brought into the New World through force; the second is the important shift in the understanding of nature, as it moves from more threatening to more promising. The first of these is well chronicled, and while I do not want to lose contact with the reality of the genocides, I also do not want to get lost in them—that is a different scholarly project than this one.

Combat and Combinations: The Complexity of the Melting Pot

As such, I would like to examine some of the contours of the moment of contact, starting with the position of the colonizing Europeans. There is a tendency to see the European influx into North America—let alone the English—as creating a relatively monolithic cultural inheritance, for example in Abrams' claim that “the geographical New World had been identified with the new earth prophesied in Revelation, and the belief that America was the locale of the promised millennial kingdom had been brought to these shores both by Franciscan missionaries and by the Puritan fathers.” (Abrams 1971, 411)

The truth is much closer to the combinative nature that Albanese focuses on, and many of the tensions that surround different conceptions of the world and how we should relate to it are a result of the diversity and multiplicity of the early settlers, not to their unity.

Following the work of David Hackett Fisher, Albanese notes that four separate

waves of British immigrants who, between 1629 and 1775, made their way to the North Atlantic colonies. The first was an eastern English Puritan immigration to Massachusetts from 1629 to 1640, and the second, the passage to Virginia from about 1649 to 1675 of a Royalist elite from southern England, together with large numbers of indentured servants. A third wave of immigrants departed from the North Midlands region of England and Wales to settle in the Delaware Valley from 1657 to 1725. Finally, a fourth wave of people came from the north of Britain and northern Ireland, mostly from 1718 to 1775, making their American homes in the Appalachian backcountry. (Albanese 2007, 67)

Each of these would contribute to the foundation of the new metaphysics of nature that emerges in North America; a legacy of certain oratorical traditions of public preaching, of anxiety around the dealings between humanity and the forbidden power of the demonic (most notably, in the concern over witchcraft and the prosecution of its performers), and of the desire for the nascent realm of science to form a bridge between the mysterious and the directly apprehensible is carried forth from the Puritans of the northeast; in Virginia, “Royalist English settlers yielded a version of proto-metaphysics distinct from that of New England,” (Albanese 2007, 73) where an openness to the magical nature of humanity focused on the notion of fortune, both as economic wealth, and as the ways in which we perceive and unravel the threads of our individual and collective destinies. As Albanese notes parenthetically, “there was surely witchcraft, but there were never any Virginia executions of witchcraft offenses, and the courts actually punished those who falsely accused their neighbors of witchcraft activity.” (Albanese 2007, 73). Instead, here we find myriad forms of fortune-telling, of “carving ancient signs on ...

houses to bring good fortune,” of a dominant interest in astrology culminating in the publication and circulation of “fortune books,” used to select auspicious names for offspring. “The same fortune books that helped to name the children of Virginia’s gentlemen were packed with material to help ensure luck in all aspects of life from cradle to grave—good health, safe travel, love, marriage, and sexuality all were covered in these treatments of personal faith and promise.” (Albanese 2007, 74) With the third wave of English immigrants, “the North Midlands immigration to the Delaware Valley from 1657,” we find “still another metaphysical pattern that would eventually be strongly assimilated into an emerging American metaphysical religion.” Here, even as witchcraft is attacked and the Quaker leadership officially discourage “popular practices such as prophecy, divination, geomancy, chiromancy ... and astrology, ... —through their own ‘magic’ of the inner light—members of the Society of Friends brought the metaphysical into their everyday world.” (Albanese 2007, 75) Drawing on “German sources of Continental Hermeticism, particularly as mediated through the works of Jacob Boehme,” the Pennsylvania Quakers offer a “metaphysical realm [that] was personal and communicative in ways that differ sharply from the Virginia gentry’s impersonal notions of fortune,” (Albanese 2007, 76) including explorations of how to experience God’s light in the experience of the world, where deep echoes of the Hermetic Kabbalah underscored “beliefs in the Holy Spirit’s healing power, in reincarnation, and—following the historian G. F. Nuttal—in Hermetic ideas regarding human fall from and restoration to unity with all of nature.” (Albanese 2007, 76–77) These immigrants, then, provided a way for the Puritan majesty of God and the Virginian openness to the power of signs in the external world to

join together in a revelation of spirit. As always, we also find counter-movements, undercurrents whose impact upon the more commonly recognized ideologies are felt in the margins, or only later as the dominant tides recede, and who are often obscured both by history and by their being branded as undesirable. Here,

in the eighteenth-century Appalachian backcountry settled by British borderlanders ... the signs that came to ordinary folk came from nature—a nature linked to the cosmos in impersonal and unfailing ways and a source of wisdom, guidance, and, especially, warning in everyday life. Correspondences were seemingly everywhere, and they were imaginatively deployed. The signs of the zodiac governed the planting of crops, and there were good and bad days to execute the various tasks that were connected with agrarian life. ... Mountaineers counted fogs in August to predict it [the weather]—or examined the color of woolly caterpillars carefully, or looked closely at how the ground hornets were making their nests. Likewise certain character traits (human *nature*) made agricultural and related tasks easier or harder. People needed to curse well if they wanted to raise healthy gourds and to be bad-tempered to produce healthy peppers. From the very beginning of life, signs greeted and accompanied a newborn who entered this Appalachian backcountry world. A woman placed a necklace of corn beads around a baby's neck to help it with teething, and a bullet or coin was used to keep away nosebleeds. Mountain folk killed the first wood tick found on the tiny body of a child with an ax so that the child would grow up to be a good worker. In an addendum, if parents wanted the child to have a good singing voice, one of them killed the tick on a banjo or bell. Still further, they scrutinized the body of the child itself for clues to future births in the family. If the baby had the same number of creases in both of its legs, the next child born would be a girl. (Albanese 2007, 77–78)

I quote this at length, both because of the clarity that Albanese's specificity allows, but also because it illustrates how, in this fourth wave of immigration, the power of the metaphysical now moves freely between external signs that must be decoded, to internal energies that have an impact on the surrounding world, and upon our efficiency within it.

Albanese sees the combination of these waves of British immigration as culminating in suggesting “the pervasiveness and diversity of a proto-metaphysical religion of correspondences and its recruitment of imaginal thinking in the service of what

could broadly be termed health and well-being.” (Albanese 2007, 78) If anything, the other major European influx in this time—that of German Protestantism into Pennsylvania and throughout the expanding western border—only served to increase these cultural spaces, where “the combinative Hermeticism of the European past and its vernacular equivalent in the cultures of the Continent and especially England had successfully executed Atlantic journeys but now open to new causes and connections in the blending of people and ideas, the metaphysical religion of the European world was ready to be a major ingredient in an American efflorescence.” (Albanese 2007, 82)

In terms of the immigrant influences, however, there is a final crucial ingredient that must be examined, that of the peoples forced to join the American experiment, taken from their African homelands through the trauma of the middle passage into the New World. The impact of African, Afro-Caribbean, and African-American practices upon America is a vast subject, and spills far beyond what any single work could encompass. As such, we are again in the awkward position of having to give a fascinating and important topic far less attention than it is due. The complexity of the situation cannot be overstated: slaves were brought to North America both directly from the lands of central and western Africa and through Caribbean outposts that had been operating for decades and, in some cases, centuries; each colony (and, later, state) set its own rules about the status of incoming slaves; and a dizzying variety of strategies were used to incorporate slavery into the emerging economic and cultural fabrics of each jurisdiction. For example, Connecticut and Rhode Island saw a slow trickle of slaves from Barbados into the early 1700s grow into a slave population between three and ten percent of the state by mid-century. Contrast

this to South Carolina, which “offered land in exchange for the importation of slaves,” a process “so successful that in 1715 there were more blacks than whites—10,500 to 6,250. Five years later the black population was nearly double the white, and in 1724 it was triple the white population.” (Albanese 2007, 83) The slave population, of course, was never monolithic—indeed, far from it. Building on the work of Michael Gomez, Albanese, writing in 2007, summarizes the geographic source of Africans in the Americas as follows:

The two largest sources of slaves in British North America were West Central Africa (which included Congo—the former Zaire—and Angola) and the Bight of Biafra (which encompassed present-day southeastern Nigeria, Cameroon, and Gabon). Together these two regions accounted for over 50 percent of the slave imports. Other major sources were Sierra Leone, Senegambia, and the Gold Coast—each of the three hovering close to 15 percent of the total slave imports. Among these three, Senegambia was an early and substantial player, whereas Sierra Leone started slowly and increased its role as time passed. Meanwhile the Gold Coast supplied a steady stream of slaves from 1673 until the end of the slave trade. (Albanese 2007, 84)

While this may address the area of origin question, it does not complete the picture: drawing on multiple sources, Albanese lists Barbados, Jamaica, St. Kitts, Nevis, the Bahamas, Bermuda, Montserrat, Antigua, and the Leeward Islands as Caribbean sources for North American slaves, claiming that “until after 1750, the largest single source for New England’s slaves was the West Indies,” (Albanese 2007, 85) and making similar claims for other Southern states. Running the risk of understatement, Albanese writes that the “Africans who came spoke diverse languages, represented different ethnic and culture groups, lived under distinct governance units in their homelands, and practiced separate and different religions.” (Albanese 2007, 85) What emerges from this overview is an attempt to examine how people, “under continual attack by Anglo-Christian social and epistemological culture,” (Albanese 2007, 86) struggle to create coherence and

consistency, simultaneously incorporating culture from Africa (conjure, certain cosmological assumptions, notions of community) and interacting with—accepting, embracing, rejecting, changing, running from, denying, recreating, violently resisting—ideas found in the varieties of spiritual traditions encountered in the cities and farms, workshops and plantations, of the emerging America.

Even here, the notion of an American exceptionalism remains hard to dispel: consider the following from Walter Rucker, writing specifically on the practices gathered under the rubric of conjure: “Despite a general tendency by [Eugene] Genovese and other American historians to view the North American slave experience as unique or exceptional, the widespread belief and practice of conjuration proves that this particular phenomenon at least was a shared African diasporic reality.” (Rucker 2001, 85) Rucker’s stress is more on the engagement of conjure practitioners in moments of resistance, but the need to (re)prove the diversity of traditions that combined on these shores, many with several accretive stops on the way, is what catches our eye.

Finally, we turn to the groups that were already here, the indigenous peoples living in North America. Again we are faced with a dazzling diversity of people and social systems, out of which I want to focus on a specific theme by looking closely at what the phrase *nature religion* could refer to within different permutations of the indigenous population. Albanese nicely summarizes the initial situation:

Before Amerindians and Europeans encountered one another in the sixteenth and seventeenth centuries, anywhere from less than four to more than twelve million native North Americans dwelled in the area north of the Rio Grande River. Using perhaps 550 languages (as different from one another as, say, Chinese from English) and their dialects, Amerindians spoke in tongues that could be traced to nine linguistic stocks, each worlds apart from the other. Even when scholars attempt to reduce this cultural diversity to manageable proportions, they confront a

plethora of Indian nations, each with separate governance and self-understanding expressed in myth, custom, and ritual. Hence, in one way, to speak collectively of native North American tribal cultures is to do violence to the subjective sensibility of many different peoples. (Albanese 1990, 19)

Before moving on, it is important to take note of the numbers, and to recognize that the violence referenced here was aimed at more than just abstract sensibilities: within four hundred years—that is, by 1800—the native population has been reduced to

about 600,000, whereas by that time in North America the population stood at a little less than five million whites and about one million blacks. Decimated by European diseases like smallpox, Native American cultures encountered crisis unlike any their people could recall. Indeed, scholars have called the ravages of diseases like the smallpox, bubonic plague, measles, and hepatitis among Indian populations—who possessed no immunological resistance—not epidemics but *pandemics*. (Albanese 2007, 96)

One set of specifics should suffice: Albanese's summary of the situation in New England can be taken as representative of the speed and level of the decimation encountered by Native American groups, where

an estimated 50,000 to 144,000 American Indians could be counted at earliest European contact. By the time permanent English settlements came, their numbers had been reduced by as much as 80 percent or, for the Ninnimissinuok of northern and central Massachusetts Bay, perhaps 90 percent—in the familiar narrative of drastic decline we have already encountered. Population estimates by the contemporary Puritan Daniel Gookin, which were careful, controlled, and specific to each separate Indian group, suggested the extent of the devastation. Indeed, in all of New England, after the epidemic of 1616-1617, writes Alden T. Vaughan, perhaps only 15,000 to 18,000 Indian people remained; and the Massachusetts Indians, for whom the colony was named, may have dropped from 3,000 to 500 people. (Albanese 2007, 100)

In addition to the sheer overwhelming diversity of the native North American populations, it is important to recognize that—parallel to Smith's discussion of *religion* above—even the concept of “American Indian” is an external idea, one that the European colonizers needed to invent in order to coherently refer to “those people, out there.”

Keeping this in mind, we can proceed along with Albanese:

On the other hand, cast beside the European invaders, Amerindians and their religious ways shared much in common. Indeed, in southern New England, where Puritan and Amerindian met face-to-face, the underlying unity among a series of Indian cultures was reflected in their common Algonkian heritage of related languages, social structure, and religious mentality. (Albanese 1990, 19–20)

That is, even given the wide disparity of culture of the native North Americans—a diversity that was still present among the subset of those who inhabited the North Atlantic coast—there were also similarities in cultural presentation that reinforced the Europeans’ sense of the individuals and communities they encountered. This presents a methodological quandary for a rough survey such as we are currently undertaking: we could proceed as Albanese does, moving from group to group, drawing parallels and contrasts between them, but never really touching down in a single location. However, this works to collapse the differences cited above, to erode at the diversity between the indigenous groups, and to run dangerously close to the violence of which Albanese warns. The alternative would be to dive headlong into a single, identified community; however this risks creating an equally damaging reduction, where a single tribe is reified as emblematic of all “indianness.” Mitigating against that risk requires a heavy investment in Geertz’s “thick description,” something that would take the present work too far afield. Albanese’s solution, essentially, is to attempt to do both: after some introductory discussion that touches on, among others, the Eastern Cherokee, the Kiowa, the Hopi, the Oglala Sioux, and the Navajo she focuses on the Algonkians of Southern New England—identified as “the Narragansett (of present-day Rhode Island), the Massachusett (of Massachusetts Bay), the Pokanoket or Wampanoag (of Plymouth Colony), and the Pequot (of present-day Connecticut)” (Albanese 1990, 26)—for deeper research. Note that the difficulties outlined are, in a harbinger of later chapters, fractal in nature: the identification

or combination of local tribes is suspect to the same concerns as larger, regional aggregations: no matter what scale is used, the tension between too little detail and too much local specificity for the academic project presents itself, calling into at least faint question the legitimacy of the project itself.

The difficulty of Albanese's situation is compounded by her existing at a double-remove from her subjects: not only are most of the extant accounts of the Algonkians of Southern New England those of colonial settlers, but also, the further chronologically we move from the point of initial contact, the more material we have, leading to an inevitable dominance of later historical views over the contemporaneous. Our current work suffers from a third complication: Native Americans have been culturally constructed over the past century as being "in tune with nature," as representing a naturally connected, spiritually rich alternative to modern European and American cultural practice. This construction is a recurring theme in this project, and it requires great care to separate observations of and comments on the construct from claims about either its accuracy or the real cultures upon which it claims to be based.

I have taken the time to highlight these issues not because of any particular complaint about Albanese's scholarship—indeed, she treats her material with exemplary engagement and respect—but rather because these same issues of conflation, of historical recreation, of skimming the surface of cultural groups in search of comparative objects will return several times in the following chapters. As such, it is worth noting their existence here, and in developing a discerning ear for echoes of their reappearance.

Creating Other(s) Histories or, Neither Your Earth Mother Nor Mine

*I will tell you something about stories,
[he said]*

They aren't just entertainment.

Don't be fooled.

They are all we have, you see,

all we have to fight off

illness and death.

*You don't have anything
if you don't have the stories.*

Leslie Marmon Silko, *Ceremony*

I want to follow this further, tracing an example of the importance of the local through a complicating moment where the line between the insider and the outsider is, if not eradicated, certainly blurred dramatically. The first example is culled from the wide-ranging scholarly archive of Arthur Versluis where, in *Sacred Earth*, he carefully unpacks several cosmological narratives from Native American groups of the southwest, stories found either in whole or as close cognates, in a variety of New Age material as proof of similarity, as a notion of “indianness” that, if we only embraced, would show the ultimate truth not only of those cultures, but of the New Age itself. The difficulty is that such claims are built upon fundamental misreadings.

There are several things to note about this “myth of the Emergence,” common in slightly different forms to many tribes, particularly those of southwestern North America. Above all, we need to note that the Emergence is not a hidden tribal reference to evolutionism; humankind is not “evolving” toward a common “New Age.” Rather, the myth of Emergence refers to the doctrine of time cycles found throughout the world’s religious traditions; each of the four worlds represents a single time cycle within a larger cycle to which we belong, and each of the

catastrophes represents the obliteration of decadent past civilizations, some of which were destroyed because they had decayed into very destructive forms of sorcery. The catastrophe at the end of our own age will be the most complete, for its end represents the conclusion both of a single cycle and of a larger quadripartite cycle.

We should note also that the symbolism involved is not a progressive ascent from an inferior to a superior state; rather, humans are born into a primordial “golden” or paradisaic [sic] world; humankind slowly becomes decadent; the decadent ones are destroyed; and a new world appears, at its inception more perfect than the last at its decadence but not as perfect as the first age. Hence what we must here call “metahistory” is a downward spiral, each spiral returning to the same relative place in the circle but slightly lower. And the human state of Emergence into the world from the ant kiva or the hollow reeds represents the reemergence from the “heart of the world” of primordial man, which is precisely the symbolism also of Noah’s ark upon the floodwaters. (Versluis 1992, 25)

I would quibble with the gesture towards “the world’s religious traditions,” but the rest is a typically economical deconstruction of false representations of aboriginal cultures in North America whereby the concerns of the colonizer are served by a misinformed reading of often unrelated material. The last thirty years have seen the situation become even more complex: an argument that runs beneath much of this thesis is that certain forms of magical thought, of mysticism, of the New Age are representations of deeply entrenched American ideas that find fertile ground within our general cultural milieu, just as they have in prior decades and centuries. As such, you are just as likely to find emic claims that offer similarly historically anachronistic readings as etic.

This final twist lies at the heart of our second exemplar, one that sits squarely at the intersection of much of what animates this thesis: embodied notions of a religious earth colliding with complex movements in both culture and scholarship that call into question issues of authority, authenticity, and interpretation. The specific topic under consideration is the notion of a Native American conception of a goddess of the earth, and the key

scholar is Sam Gill, who sets the stage with the comparatively uncontroversial statement that “there has been uncontested agreement among Indians, scholars, and the general American populace that Mother Earth is a goddess widely known since great antiquity, one central especially to the religions of native North American peoples.” (S. D. Gill 1987, 2) Yet, as Gill goes on to show quite brilliantly, it “becomes clear that Mother Earth has come into existence in America largely during the last one hundred years and that her existence stems primarily from two creative groups: scholars and Indians.” (S. D. Gill 1987, 7) Gill’s study captures the process of “eternalizing” as it happens, highlighting how remarkably scant historical evidence—in this case two quotes from nineteenth century Native American leaders (the Shawnee Tecumseh and the Wanapum Smohalla) and the traditions of two tribal cultures (the Zuni and the Luiseño)—can in time be reproduced and transformed into a symbolic net under which entire cultural geographies are caught. Gill’s work also serves to highlight the complexity that ensues from this situation: note that, according to him, the two active groups in the production of “Mother Earth” are scholars and Indians; the process is a result of collaboration between outside experts and engaged members of a specific community.

This is a different case than the boundary work explored by Hess above: in this case, the etic and the emic are not in conflict, but rather cooperate—albeit often unwittingly and in service to ideals upon which there is no agreement—to create a new turn in the spiral of history. This last point is vital, as it creates a space in which we can understand the response of claims to authenticity: that is, belief in and worship of a pan-Native American Mother Earth certainly exists today, and the digging at the historical

roots done by Gill (digging that, it must be said, came at a high personal and professional cost) does nothing to lessen, demean, or change that reality. It does, however, shed light on from where that reality emerges and on how that process unfolds, in ways that will prove useful when encountering other alterations in belief related to nature and the Earth.

While Gill's historical work is impressive, I want to focus on the final turns to his arguments, where he looks through a wider lens at the question of just how scholars of the peoples of North America have come to see the figure of Mother Earth "as well established in the region since great antiquity." (S. D. Gill 1987, 120) Gill begins by reaching back to the nineteenth-century figure of Edward B. Tylor and his claim that

the idea of the Earth as a mother is more simple and obvious, and no doubt for that reason more common in the world, than the idea of the Heaven as a father. Among the races of America the Earth-mother is one of the great personages of mythology. (Tylor 1873a, 326)

Gill traces a direct line from Tylor's statement, along with the specifics of his three examples concerning North American peoples, through such scholarly luminaries as Andrew Lang, Albrecht Dieterich, James George Frazer, and Mircea Eliade into the present day with the work of the Swedish scholar Åke Hultrantz. In this lineage, a pattern repeats again and again of a claim to the self-evident nature of the figure of the Earth-Mother that is then supported with the smallest scraps of evidence drawn from widely disparate sources: the Earth Mother is assumed, not proven; and therefore allowed to stand without question despite a lack of serious inquiry. In fact, Gill identifies only *five* examples that, in being passed down from scholar to scholar, form the entire supporting structure for these claims. In a remarkable summary of the situation, Gill writes that,

given that there are hundreds of tribes in North America and hundreds of thousands of pages of ethnographic documentation of the history, oral traditions, and religious practices of these tribes, it is highly peculiar that the documentation for the nature and existence of Mother Earth, held to be a major figure throughout North America, rests almost wholly upon a scant reference to an earth-related goddess told in a captivity narrative, a statement attributed to Tecumseh during negotiation with the U.S. government revealed in an anecdote, the statement of a leader of a small and hopeless millenarian movement in which the leader defended his relationship with the land against the overwhelming forces of American settlement, the outlines of Zuni creation conceptions formulated into story form by a romantic ethnologist, and the stories of an incestuous, rapacious world creation story told by persons of a culture at the brink of extinction. (S. D. Gill 1987, 121)

The next step in the argument is radical for the material at Gill's disposal, yet somewhat obvious given the questions about power raised above: that is, if these claims that are presented as such obvious foundations for the examination of the cultures of the world (admittedly not all of the scholars cast their net so broadly, but this was clearly the focus of Tylor, Frazer, and Eliade) are not to be found in the source materials themselves, what does that tell us? First, let there be no question: Gill states quite explicitly that "there is no possibility whatsoever of beginning with the data of North America and drawing the same conclusions that have been so commonly made, that is, that Mother Earth is a major American goddess, or even more strongly put, that she is the goddess of the native races of America." If she is not to be found there, then the "only explanation for such conclusions is that, for scholars who have studied her, Mother Earth must exist before they even consider the North American evidence. This may also imply that they understand her to have existed even before the formation of North American cultures." (S. D. Gill 1987, 122)

Gill frames his analysis in terms of stories and story-telling, a move that both aligns him explicitly with a variety of North American traditions and creates a space where he is able to interrogate his material while avoiding some of the traditional antagonisms of

scholarship. That is, Tylor, Eliade and the rest are telling a certain story, and the relationship of the teller to the tale, as well as the reception of the tale by a range of audiences remains, in the end, at least as important in its evaluation as its truth, if such a thing could even be ascertained. He does this in explicit resistance to the use of the term “myth,” which Gill sees as “sufficiently confused in its usage, not only in a technical sense among scholars, but also in its contrast with common public usage, to make it a term worth avoiding.” That said, he clearly intends his use of story to include his preferred meaning for myth as “the story on which truth is based.” (S. D. Gill 1987, 156)

As such, there are clear political and social repercussions for the selection of one story over and against another which prevents the storytellers from escaping the implications of the narrative they offer: in the end, the story of Mother Earth

is a story of the oneness of humankind, but a story in which the many peoples of the world are hierarchically interrelated with one another. It is a story that makes Native Americans primitives when compared with European-Americans. It is a story that supports a range of social, economic, and political relationships, very likely oppressive, among peoples in America. (S. D. Gill 1987, 128)

In our post-colonial world, this is simple enough. We have the collapse of complexity, individuality, and specificity into a single narrative, generated by a colonial power and projected upon a dominated and oppressed culture. The net result is that a single, universalized and eternalized Mother Earth is created, which replaces the wide diversity of female and feminine divinity that exists across Native American tribal traditions, where a

rich variety of female figures whose stories and characters are often complex and sophisticated will be found. Some of these figures may be associated with fertility and growth, but many of them with evil and death; some of them are treated with reverence and respect, but many of them are not; some of them are associated with the earth or with the earth’s life and productivity, but many of them are not. (S. D. Gill 1987, 154)

It also, however, leaves a significant thread hanging unresolved: the story that Gill traces is a creation story, and “stories, especially creation stories, have power ... I believe it can be shown that Mother Earth has literally stepped forth from the word to become a major Native American goddess.” (S. D. Gill 1987, 128) References to Mother Earth (and, incidentally, Father Sky) in the statements and writings of Native Americans begin to proliferate in the second half of the twentieth century, a phenomenon that Gill attributes to the confluence of many factors, including the increased importance of political and social movements with a Pan-Indian focus, the increasing prevalence of environmental concerns, and the expectations of a non-Indian audience for the presence of such a figure.

The first of these is the simplest, but also the most historically fragile for his specific claims. While there is a very long history of alliances and confederations among tribes that predates the arrival of Europeans, the birth of the various Pan-Indian movements can be traced to the forced relocations of various tribes that began within a decade of the formation of the United States of America, but gained dramatically in scope and violence during the nineteenth century. Neighboring tribes, tribes that were historically aligned, tribes that were historically antagonists, tribes that had never met; all were forced together in what became a melting pot of Indian culture, centered in the Western plains from Oklahoma to Idaho. Responses to this varied, of course; but one strategy was for leaders to focus on downplaying—if not attempting to erase—tribal differences under the banner of a single “Indianness.” This is, essentially, a dual strategy, where unity is created by claims that “we are all Indians,” and, sometimes more or less explicitly, through the dramatic contrast this allows between us and our oppressors: “we are all *not* white.” This second

part can take many forms, from the total rejection of white culture and institutions, to the insistence that Indian culture supersedes, anticipates, or is otherwise superior. These reactions can be seen from the rise of the Native American Church in the late nineteenth century, through countless other examples, to the calls for cultural revolution by activist Russell Means in the early 1970s to the claims of Hopi revelation by Thomas Banyacya in recent times. (S. D. Gill 1987, 138–147)

In any case, Mother Earth emerges as a double reaction to the European story about her: on the one hand, she is expected and anticipated, and as such offers a powerful symbol to use in negotiations with or appeals to the white power structure; on the other hand, she is a symbol of what the Europeans lack, that is, she comes to help define the difference between them and us, and as such, becomes a rallying point around which strategies for resistance may be formed. It is not coincidental at all that a large number—indeed, in all likelihood a majority—of the references to Mother Earth are associated with discussions of the ownership, use, or appropriation of the land, a theme integral to European-Indian relations from the first appearance of Europeans. Note that the bulk of the exceptions to this are moments when Mother Earth is used in support of the expansion of various religious practices into the white marketplace, foreshadowing our discussion of the global economy of the New Age in chapter five.

Gill offers us a very useful model in our explorations of how ideas and cultural structures are exchanged and developed as they move along and across the borders that join disparate communities. Most importantly, his insistence on the simultaneous production and reception of cultural forms will prove an instructive idea to retain as we

progress, specifically as the figure of the earth is passed back and forth between scientific and religious interests later in our discussions. From Albanese through Versluis and Gill, we are left with a picture of the religious dimensions of pre- and post-colonial North America that contains an extraordinary diversity, both at any given historical moment, but also across them and, while the former is commonly embraced, the latter rarely is, jettisoned for notions of historical continuity that all too often fade away through close examination.

With this in mind, it is with caution that I proceed with some very broad generalizations about the local cultures encountered by the first waves of European colonization and about the components of their world-views that could be interpreted as sympathetic. One such similarity concerns how humans envision their interactions with the natural world, and with the non-human creatures that inhabit it. For native North American cultures, this was essentially a *relational* process, a network of interactions, disclosures, and revelations between a variety of beasts, beings, and forces. Animals and even inanimate objects themselves often (and sometimes always) contained the possibility of a both/and presence where they were simultaneously a creature of the earth and something more, something that was alive in a different way.

Not all of what we name nature was identified by the Indians in personal terms, but the presence of persons animating “nature” radically grounded their nature religion. “Are *all* the stones we see about us here alive?” the anthropologist A. Irving Hallowell asked one old Ojibwa man in the 1950s. After reflecting a long time, the man replied, “No! But *some* are.” (Albanese 1990, 20)

A second common thread was the power of the human agent, the sometimes-latent, sometimes-manifest ability of certain (if not all) individuals to perform what I follow

Albanese in terming magic, a term that requires some examination before we proceed much further. Albanese's understanding of magic—and mine and, most importantly, that of the subjects we encounter in later chapters—reaches far afield of earlier uses of the term in the study of the history of religion. For example, Marcel Mauss' turn-of-last-century definition sees magic as a category of those practices that are held separate from “*organized cults*—it is private, secret, mysterious and approaches the limit of a prohibited rite.” (Mauss 1972, 30) Mauss is sensitive to the arbitrariness of the notion that “what *we* do is religious, what *they* do is magical,” but he is unable to cleanly extricate himself from the subjective difficulties, a problem that may be the result of his commitment to creating a sort of operational checklist that could be used to identify the magical, focused on the types of actors involved, the relationship of the behavior to other social interactions, the timing and perceived efficacy of the activities, etc. This sense of magic as the dark underbelly of religion clearly has some historical roots, echoing both a notion of tantrism and confirming a location for those religious practices that are nearly ubiquitous, but push towards the boundaries of a socially constructed comfort zone. For Mauss, the “only firm conclusion seems to be that the vague notion of magical power stands disreputably on the social periphery, assuming many ambiguous forms, but always constituting a threat to the social order.” (Styers 2004, 89) Similarly, it is important to keep in mind that, in Eliade's words, “magic does not dominate the spiritual life of ‘primitive’ societies everywhere by any means; it is, on the contrary, in the more developed societies that it becomes so prevalent.” (Eliade 1958, 23) Magic cannot be seen as something old and discarded, a mystery whose truth is shrouded by layers of time and distance.

All well and good, but it doesn't help us move closer to a definition of what magic actually *is*. "As G. R. Quaipe rather succinctly expresses the situation, 'Magic is a label applied to phenomena which have certain characteristics in common. There is little agreement on the phenomena or the characteristics.'" (Styers 2004, 29) The topography is well described by Styers, when he writes that

The effort to mark off a region of the conceptual and social terrain as magical involves, at the most basic level, an act of demarcation, a juxtaposition of magic with other social practices and modes of knowledge. As the social context shifts, so also magic is transformed, assuming new forms and exerting new powers.

The nature and role of magic in Western society have changed profoundly over recent centuries as the social order itself has changed, the most significant of these developments involving transformations in economic and political structures and concomitant shifts in the demarcation and social position of religion and science. (Styers 2004, 25)

Albanese offers what may be thought of as a structural definition of magic, one that describes its function but remains agnostic on any particular form. While this enables our comparative venture in exceedingly useful ways, it also makes the definition itself complicated. Magic involves the active engagement of the will of the practitioner with the monistic divine energy described above; it can happen through "the use of artifacts and stylized accoutrements, in ritual, or ceremonial, magic" or it can happen on the imaginal plane, where "the mental powers of imagination and will can affect and change the material order, abolishing apparent flaws by realizing its unity with a cosmic Source." (Albanese 2007, 7) Magic is a "bringing about," aimed at internal or external change and while they may be obscured, hidden, or even inaccessible to some, the energies that allow magic to occur are *of this world*, present alongside and intertwined with normative reality. Magic is, at its core, natural. Indeed, magic may be seen as the manifestation of the natural

into the social world: it is, much like the clearing of the wild to which we will turn shortly, an expression of the transformation of the unruly and uncontrollable into a tangible and perceptual moment.

This brings us to the intense conflict at the point of contact: the Puritans were quite open to what we are terming the metaphysical in the abstract; indeed, their imprint is still felt in many of the practices and traditions we will encounter. However, the form of their traditions, and the specific form of their relation to nature, created a core incompatibility with the native North Americans they encountered.

If Amerindians lived a nature religion without possessing the abstract and universalized European concept of nature, Puritans understood nature in overarching and universal terms but never found the centeredness in nature characteristic of native peoples. Both cultures, in the contact situation, acknowledged the existence of sacred powers and, more, saw a holy presence in the world and in daily life. And both cultures valued community and lived according to “tribal” norms. But with the absolute claims of their religions commitment, the Puritans could not find common ground in nature with southern New England Algonkians. (Albanese 1990, 34)

This encounter based on a mutual failure to comprehend, a deep inability to see each other, was doomed to fail, and fail it did, culminating in a century of constant displacement, of the forced relocation of thousands and thousands of people westward, away from the places they had lived, in war and in peace; in plenty and in need; sometimes for millennia, sometimes for only a few generations; accompanied by intentional violence that often manifested in brutal, bestial behavior. It should be noted that the violence, while mutual in scope, was also manifest in a typically asymmetrical pattern between the native North Americans and the colonizers.

Beneath the Bridge: Shadows and Violence on the Road to America (I)

*When he come home, his politicking done,
The western march had just begun.
So he packed his gear, and his trusty gun
And lit out a grinning to follow the sun.
Davy, Davy Crockett, Leading the Pioneers.*

*His land is biggest, and his land is best
From grassy plains to the mountain crest
He's ahead of us all in meeting the test
Following his legend right into the West
Davy, Davy Crockett, King of the Wide Frontier
King of the Wild Frontier.*

George Bruns (Music) and **Grant Sherman Henry & Thomas
W. Blackburn** (Lyrics), *The Ballad of Davy Crockett*

What, for our purposes, joins the early colonial moment to later America? The usual answer here invokes the Enlightenment, and, joining it to the American Revolution, presents an image of inalienable natural rights, of an anthropocentric world centered around men attempting to live life to its fullest; at its most noble, striving towards a perfect state dictated by nature and/or God. This reading is not incorrect, and indeed forms a useful intellectual bridge between the “founding fathers” and, say, Transcendentalism. There is, though, more to the narrative than this, a more that is often revelatory of a darker, less attractive heritage. The point is not—as is far too common in recent scholarship—to deconstruct or destroy the other readings, but to reinforce the multiplicity of heritages that form the backdrop for this project, and to underscore the methodological assumption that, for all of us and for all of the subjects we study, there are often many things happening at

once, often contradictory impulses simultaneously struggling for expression. Albanese offers the notion of “meetings” to hold this concept, using that as a shorthand for the ways in which North America provided a venue where “challenge, confrontation, and exchange” occurred, forging “new circumstances, relationships, and meanings” for all involved. While agreeing with the general thesis she puts forward, I would caution against the equality she sometimes ascribes to the model. That is, while it is true that “the land under Indian feet was reentered by native peoples made over by their encounters with Europeans and Africans, just as the Europeans and Africans walked on unaccustomed terrain,” it is too easy to lose sight of the disparity in power and violence distributed among and between those three groups. Still, the underlying concept of seeing early America as a flow of diverse interactions is a powerful corrective to the standard reading of American history, where many of these exchanges have been “read mostly in terms of European influence on the ‘lesser’ and ‘simpler’ peoples from Africa and North America—or simply not seen at all, since much of the cultural trade occurred without the benefit of archives.” (Albanese 2007, 110)

Methodologically, the previous chapter combined with the above should suffice. The traditions that I write in are traditions of juxtapositions, of complexity, of holding up figures of thought to each other to see what is reflected between. If I am successful, they are also traditions that result in moments of insight and meaning and that avoid the dangers of speaking too long without saying anything, as well as the dangers of casual engagement witheringly detailed by J. Z. Smith (who is speaking more directly about, or really, at, Frazer):

The data are accepted as being overwhelmingly and massively there. Interpretation and comparison are simply not asked for. Similarly it is the aesthetic of the catalogue or list to present largely a surface appearance. Depth, the problematics, are eliminated (much as in a Robbe-Grillet novel) in favor of the “hard” enumeration of things. When one does begin to ask depth questions, when one inquires into the context of the material, the principles of internal order governing the lists, or asks for some evaluation of the significance of the material (other than it is exotic and hence intrinsically interesting), the surface cracks apart. Franz Steiner, in his important book *Taboo*, has caught a classic instance in Frazer: “Burial grounds were taboo; and in New Zealand a canoe which had carried a corpse was never afterwards used, but was drawn on shore and painted red. Red was the taboo colour in New Zealand; in Hawaii, Tahiti, Tonga and Samoa it was white. In the Marquesas a man who had slain an enemy was taboo for ten days; he might have no intercourse with his wife and might not meddle with fire; he had to get some one [sic] to cook for him. A woman engaged in the preparation of coconut oil was taboo for five days or more. (Smith 1978, 252)

Following chapters will detail some of the progressions from the nineteenth century into the present day, and while many important moments will be left out entirely (most notably, the early American roots of what comes to be referred to as the New Age is given scant treatment), it seems more proper to embody these methodological concerns directly in those discussions, rather than provide a critical lineage at this juncture. That said, two further moments will serve as additional opportunities to demonstrate these concerns. The first continues our debt to Albanese, building upon parts of her discussion of the late 1700s and the westward expansion of a fledgling America; the second attempts to use Emerson and, specifically, 1836’s *Nature* as a moment to consider in some depth the relationship of humanity to the external world, completing the backdrop necessary to move more deeply into our source material itself.

The first stopping point finds us with Thomas Jefferson (1743-1826), writing in *Notes on the State of Virginia* of the majesty of the view from the top of “the most sublime of nature’s works,” the Natural Bridge formed where the Potomac River flows into the

Blue Ridge Mountains. The specifics of Jefferson's writing here are worth noting: the view from the ground is spectacular, "so beautiful an arch, so elevated, so light, and springing as it were up to heaven! the rapture of the spectator is really indescribable!" This is held in sharp contrast—indeed, "delightful in an equal extreme"—to the view from above, from the "parapet of fixed rocks" where it was possible to gaze over the edge. However, Jefferson finds that view dizzying, "painful and intolerable," and resulting in "a violent head-ache." (Jefferson 1782, 148)

This is summarized by Albanese, perhaps a little too patly, as "*American sublime*," where, "rather than being terrified, one liked and enjoyed being on top. That Jefferson was the legal owner of Natural Bridge as real estate only underlined the connection: American sublime hinted of empire and dominion." (Albanese 1990, 69–70) Here we have the subtle dominance of the transcendent moment: a lone figure, at first humble and gazing upwards towards a spiritual majesty, but quickly revelatory of a different perspective altogether, one that places the actor more on the divine side of the spectrum than the human, gazing down and out, encompassing in his view that which is yet to be assimilated and, if truth be told, more than a little discomfited by the god's-eye view.

This reveals a constant in early American discourse: a consumptive mechanics of production, a process whereby a resource—in this case, land itself, although there is a structural parallel with the populations that are brought into the burgeoning America—is acquired, integrated into the existing system, and then converted into a new form. This is, of course, the cultural logic of "manifest destiny," but it is also seen in more tangible cultural forms: take, for example, Davy Crockett (and, explicitly, *Davy*, not David

Crockett, the real-life politician who began service in Washington for the state of Tennessee in the 1820s). The “King of the Wild Frontier” was a child of the 1830s, a work of fiction created through the popularity and widespread success of *Davy Crockett’s Almanack of Wild Sports of the West, and Life in the Backwoods*. As such, he should be read both as a projection of a specific historical context, and also as a symbolic desire, an image of what the consuming public wanted to believe about America, about our relations with others, and about our continued westward drive. Crockett’s expansionism was unambiguous: he “was certain that Texas, Oregon, and California all belonged to the territorial domain of the United States,” or, as he put it himself, he “knows how to talk about Oregon, annex Texas, flog Mexico, swallow a Frenchman whole, and lick John Bull clear out of his breeches!” Albanese repeatedly paints the cannibalistic tendencies on display as a Eucharist, however—as compelling as the picture is—I am not convinced that the same mechanics are at play here, especially with regard to the value of the host.

Another example: in a speech from his seat in Congress, Davy Crockett says, “I can walk like an ox, swim like an eel, yell like an Indian, fight like a devil, and spout like an earthquake, make love like a mad bull, and swallow a nigger whole without choking if you butter his head and pin his ears back.” (Albanese 1990, 75) There is an animal shamanism here, but the unapologetic racism of consumption is more striking. Native Americans fared no better, their blood is used to water fields, the violence against them explicitly forwarded as a means for increasing the fecundity of the American enterprise in yet another example of what Versluis calls “a history of unparalleled abuse and perfidy.” (Versluis 1992, 137)

“What all of this suggests is that Davy Crockett and the demands of manifest destiny

represent, in fact, the underside of revolutionary idealism. The twisted vision of Crockett ... reflect the twists in a popular American mentality grown arguably overlarge. In this nineteenth-century American enactment of its themes, nature religion had become dominance over the land.” (Albanese 1990, 78)

In linking these two figures as symbolic exemplars of cultural modes, the distinction drawn in the previous chapter between *nature* and the *wild* may again prove useful. Jefferson is a man of nature—he unabashedly embraces his agrarian roots, and remains in his life quite *settled*. The majesty of the outdoors for him is delimited by the cleared field, the geography of the known; the caricature that is Crockett, on the other hand, is a man of the wild, constantly on the move, and constantly pushing the boundary of the American domain outward through his acts of conquest. While the ideals of the Enlightenment embraced by Jefferson may certainly be seen as undergirding the domination over both other racial groups and the environment that Crockett espouses, however, the two remain more different than similar. That is, I would argue against seeing the symbolic Crockett as a “dark underbelly” of the symbolic Jefferson: the history of American thought rebels against such monolithic interpretation. And, while the orgiastic violence publicly embraced by Crockett participates in a clear American tradition that both predates him and continues quite strongly into the present, those traditions play less of a role in what follows than the notion of enlightened reason in the face of nature. We will move forward with a tradition that emerges fully contemporaneously with Crockett’s Almanacs.

Emerson: Man at the Center of Nature

And with Mr. Emerson. What a height of mind is there! What a negative depth, a bottomless abyss, of heart is there! I accept both—his assets and his abysmal deficiencies. He, not unlike Mr. Hawthorne, is distrustful of what the body has to tell us. He knows not the rapture of the physical. How then, I ask, can either of them thoroughly respond to the sublime in nature? Show them a mountain—show them Mont Blanc—and do their bodies thrill to know it? to know it biblically with their whole being, with the thighs, with the lungs, with the quickened nostrils consuming the crystalline air in great gulps. They know not great gulps of anything! They are too restrained. They fear passion.

Sena Jeter Naslund, *Ahab's Wife or, the Star-Gazer*

The writings of Ralph Waldo Emerson (1803-1882) are clearly too vast for full engagement in this kind of survey. Instead, I want again to follow Albanese's lead, and focus on a structural tension in his works, a tension that remains key for contemporary metaphysicians of the west. At its simplest, this tension again recalls last chapter's discussion of *nature* and the *wild*; more specifically, I want to pay close attention to Emerson's early essay, *Nature*, and use it as a way to highlight several of the ambiguities and tensions that form the later movements that provide the focus of the following chapters. In this, I am treating *Nature* independently of the rest of Emerson's oeuvre, seeing it more as an exemplar of later issues than representative of either Emerson himself or Transcendentalism as a whole. The focus here is on how Emerson constructs nature itself, which, in spite of it serving both as title and central figure in the essay, remains a highly problematic concept. Indeed, Emerson is himself aware of this and lays out the roots of the difficulty in the first two paragraphs of the first chapter of the essay, quoted

here in full:

To go into solitude, a man needs to retire as much from his chamber as from society. I am not solitary whilst I read and write, though nobody is with me. But if a man would be alone, let him look at the stars. The rays that come from those heavenly worlds will separate between him and what he touches. One might think the atmosphere was made transparent, with this design, to give man, in the heavenly bodies, the perpetual presence of the sublime. Seen in the streets of cities, how great they are! If the stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God which had been shown! But every night come out these envoys of beauty, and light the universe with their admonishing smile.

The stars awaken a certain reverence, because though always present, they are inaccessible; but all natural objects make a kindred impression, when the mind is open to their influence. Nature never wears a mean appearance. Neither does the wisest man extort her secret, and lose his curiosity by finding out all her perfection. Nature never became a toy to a wise spirit. The flowers, the animals, the mountains, reflected the wisdom of his best hour, as much as they had delighted the simplicity of his childhood. (Emerson 1981, 9)

In the opening paragraph, nature is presented as both the sacred ideal, omnipresent as a beacon guiding humanity *and* as an ultimate source of isolation, the ultimate reminder of how truly alone we are. Indeed, this inaccessibility is a mark, not only of the celestial bodies, but of *all natural objects*, sharing as they do this “kindred impression.” Nature, exalted and praised, remains fundamentally other, a destination that is unreachable. “In the tranquil landscape, *and especially in the distant line of the horizon*, man beholds somewhat as beautiful as his own nature.” (Emerson 1981, 11; emphasis added). Here, then, nature is an external model, containing a reality all its own, and offering a set of behavioral goals, a set of ideals to emulate in its purity. And, reaching towards nature, allowing it to aid us in our “return to reason and faith,” we find the height of Emerson’s communion: “standing on the bare ground,—my head bathed by the blithe air and uplifted into infinite space,—all mean egotism vanishes. I become a transparent eyeball; I am nothing; I see all; the currents of the universal Being circulate through me; I am part or parcel of God.” (Emerson 1981,

11) As Fuller observes, “in the context of that Protestant tradition which posits an unbridgeable chasm between god and the natural order, this statement is unthinkable. But according to his own lights Emerson was describing the lawful conditions governing intercourse between the divine and human realms.” (Fuller 1986, 15)

However, Emerson remains unwilling to cede ultimate authority to nature: “it is certain that the power to produce this delight does not reside in nature, but in man, or in a harmony of both. ... For nature is not always tricked in holiday attire, but the same scene which yesterday breathed perfume and glittered as for the frolic of the nymphs is overspread with melancholy to-day.” (Emerson 1981, 11) Nature’s reality, then, is mediated by humanity, and our attitude, our mercurial moodiness, ends up determining much of what we take in of the surrounding grandeur. As such, how “real” can we claim it to being, and, even more troubling, could it be not real at all, but rather illusory, an all-too-human set of projections that serve to distract us from the eternal truths Emerson is pursuing? Albanese summarizes the emergent tension thus:

If nature was, indeed, real and sacramental, then corresponding to it became paramount. Harmony with nature became the broad highway to virtuous living and, more, to union with divinity. One discovered what was permanent and lasting precisely by identifying with the regular tides of nature’s flux. If, however, nature was at best a passing show, a foil to obscure the Absolute behind and beyond it, then seeking the enduring truth of Mind became key. Mastery *over* nature through mental power became the avenue to a “salvation” that transcended, even as it managed, nature. (Albanese 1990, 82)

This is an important moment in *Nature*, where the first chapter is brought to a sudden close, followed by an exploration of “the final cause of the world,” (Emerson 1981, 12) as seen through the prism of nature. The prism refracts in four directions, which Emerson terms commodity, beauty, language, and discipline. In each of these, nature provides

guidance and sustenance to a child-like humanity and, as such, is both real in and of itself and a benevolent presence. This is not a nature of the Trickster, nor one of illusion: it is a nature firmly to be emulated, one whose spirituality remains firmly “embedded in the *material* of nature;” (Albanese 1990, 84) yet it remains open to profound and deeply troubling doubts. Having detailed the majestic reality of the natural world, Emerson immediately admits that “a noble doubt perpetually suggests itself,—whether this end be not the Final Cause of the Universe; and whether nature outwardly exists.” (Emerson 1981, 32)

The question seems to revolve around the issue of permanence, of eternal stability. One of Emerson’s working assumptions is that such variability is at odds with God: “any distrust of the permanence of laws would paralyze the faculties of man. Their permanence is sacredly respected, and his faith therein is perfect. The wheels and springs of man are all set to the hypothesis of the permanence of nature. We are not built like a ship to be tossed, but like a house to stand.” (Emerson 1981, 33) The difficulty is that nature seems to be both subject to dramatic change *and* eternal in its manifestations. Even the mountains move, and while every winter is the same as every other, the moment where Emerson claims that, “crossing a bare common, in snow puddles, at twilight, under a clouded sky, without having in my thoughts any occurrence of special good fortune, I have enjoyed a perfect exhilaration” is specifically unique and personally transcendent. The lack of stability in the external world is underscored by the variability of our own perceptions: Emerson marvels over how a slight change in perspective—“looking at the landscape through your legs,” or someone unaccustomed to riding who “needs only to get into a

coach and traverse his own town”—makes everything fresh and new. And here Emerson offers, haltingly, a radical reversal of the previous chapters, claiming that “hence arises a pleasure mixed with awe; I may say, a low degree of the sublime is felt, from the fact, probably, that man is hereby apprized that whilst the world is a spectacle, something in himself is stable.” (Emerson 1981, 35) Note the uncertainty and the movement: *may, low, sublime, probably*, as well as the grandiose global announcement. There is something uneasy in the recognition, something I would claim emerges from Emerson’s inability to arrive with certainty at a way to comfortably create a both/and position where nature and the (explicitly Christian) God are able to coexist in the grandeur of his vision.

Albanese claims that, in *Nature*, “Emerson’s rhetoric masked and remasked theological substance—and the substance of what Emerson said was rich in ambiguity.” (Albanese 1990, 82); likewise, Dunlap claims that “Emerson was not a systematic philosopher or an exact writer, and his essays did not so much present ideas or develop arguments as set out quotable musings on declared truths in vivid phrases.” (Dunlap 2004, 47) Whether this is read as ambiguity, confusion, or philosophical error is a product of how open to the Emersonian/Transcendentalist project one is: my concern here is twofold. First, following Albanese, I would claim that “Emerson’s confusion did not cause America’s confusion, but it became America’s confusion;” (Albanese 1990, 87) that is, rather than attempting to excuse or attack Emerson for his lack of rigor, it seems more interesting to see him as honestly reflecting a set of tensions in American culture, tensions which remain forever unresolved. More immediately, I want to draw attention to some of the contours of what Emerson’s masks are concealing, specifically the ultimate chasm between humanity

and nature: in spite of nature's allure, in spite of the claims that "every natural process is a version of a moral sentence," where morality itself "scents the air, grows in the grain, and impregnates the waters of the world, is caught by man and sinks into his soul," (Emerson 1981, 29), in the end, "we are as much strangers in nature as we are aliens from God. We do not understand the notes of the birds. The fox and the deer run away from us; the bear and tiger rend us. We do not know the uses of more than a few plants, as corn and the apple, the potato and the vine." (Emerson 1981, 43) In reality, however, we are looking at a triad, not a duality. The structure that Emerson establishes contains a third component, one that I intentionally passed over in the above survey of *Nature*, namely humanity itself.

Here, we encounter another major trope in the material under consideration, one that seems often to be ignored, that of anthropocentrism and its uneasy relationship with both God and the natural world. That is, humanity is more than a mediator, more than just an open passage through which the messages of God/Nature pass or are received.

Humanity, instead, is placed at the core of it all: the underlying claim is that all of this exists *for us*. We are

placed in the center of beings, and a ray of relation passes from every other being to him. And neither can man be understood without these objects, nor these objects without man. All the facts in natural history taken by themselves, have no value, but are barren, like a single sex. But marry it to human history, and it is full of life. Whole floras, all Linnaeus' and Buffon's volumes, are dry catalogues of facts; but the most trivial of these facts, the habit of a plant, the organs, or work, or noise of an insect, applied to the illustration of a fact in intellectual philosophy, or in any way associated to human nature, affects us in the most lively and agreeable manner. (Emerson 1981, 21)

Lest there be any confusion at all as to the absolute nature of Emerson's claim that all meaning, all of the natural world, exists with humanity as its end: "the instincts of the ant are very unimportant considered as the ant's; but the moment a ray of relation is seen to

extend from it to man, and the little drudge is seen to be a monitor, a little body with a mighty heart, then all its habits, even that said to be recently observed, that it never sleeps, become sublime.” (Emerson 1981, 21) Making humanity the center of all that surrounds us has its difficulties however; perhaps the largest of which is how to explain our seeming insignificance in the face of such majesty? Answering this requires for Emerson the invocation of a new voice, his “Orphic poet,” which is allowed certain liberties that the essayist may not. This voice, however, rings a clarion call for an explanation of humanity after the Fall:

Man is the dwarf of himself. Once he was permeated and dissolved by spirit. He filled nature with his overflowing currents. Out from him sprang the sun and moon, from man the sun, from woman the moon. The laws of his mind, the periods of his actions externized [sic] themselves into day and night, into the year and the seasons. But, having made for himself this huge shell, his water retired; he no longer fills the veins and veinlets; he is shrunk to a drop. He sees that the structure still fits him, but fits him colossally. Say, rather, once it fitted him, now it corresponds to him from far and on high. He adores timidly his own work. Now is man the follower of the sun, and woman the follower of the moon. (Emerson 1981, 47)

Nature, then, came not from God, but from man—that which we turn to for guidance, that which provides us the uses of commodity, beauty, language, and discipline, the subject of the entire essay is, in the end, not something out there containing its own reality, but rather the lost past of humanity itself, a paradise towards which we must navigate in the dark, a destination that, as it emerges from the distant horizon, we “shall enter without more wonder than the blind man feels who is gradually restored to perfect sight.” (Emerson 1981, 50)

Two striking themes emerge from these final turn of the essay: the first is an echo of the discussion of Eliade’s primal time in the previous chapter, underscoring the

prescience of his insight. It is through Eliade that we are able to see that pattern of a paradise lost, yet possibly regained, of an original state towards which we strive as *more than* simply an unspoken Christianity, allowing an opening of interpretation and readings of later similar claims. Second, Emerson describes a mechanism of projection, of an investment into the surroundings of an essential human nature, that is then deified and worshipped. Structurally, this seems to echo the process by which Émile Durkheim (1858-1917) envisioned all religion as an externalization of our love for ourselves. While Durkheim's discussions center on the concept of the social, they are also quite useful within the domain of Emerson's individuality. (The tension between an anthropocentric—and therefore individualistic—view and that of the sociologist is a false one: both are concerned with the representation of humanity, turning to different metaphoric stores for their language and form.) That said, however, we must note that Durkheim's discussion of what he terms “naturism” is deeply embedded in a highly suspect project: he opens *The Elementary Forms of Religious Life* by stating that his goal is to “study the simplest and most primitive religion that is known at present, to discover its principles and attempt an explanation of it” (Durkheim 1995, 1) The rationale for doing this is that the “lower” or “more primitive” cultures are able to, by their proximity to an undiluted source, help us understand our own (higher, more advanced, preferable) culture. Interestingly, Durkheim softens his judgment on religion as a whole:

Fundamentally, then, there are no religions that are false. All are true after their own fashion: All fulfill given conditions of human existence, though in different ways. Granted, it is not impossible to rank them hierarchically. Some can be said to be superior to others, in the sense that they bring higher mental faculties into play, that they are richer in ideas and feelings, that they contain proportionately more concepts than sensations and images, and that they are more elaborately systematized. But the greater complexity and higher ideal content, however real,

are not sufficient to place the corresponding religions into separate genera. All are equally religions, just as all living beings, are equally living beings, from the humblest plastid to man. If I address myself to primitive religions, then, it is not with any ulterior motive of disparaging religion in general. (Durkheim 1995, 2)

Disparaging human beings—in spite of the universal claim of equality to a category of plant/algae cells—is, however, an ever present component of Durkheim’s project. In this, of course, he is not alone: we are in an awkward position of wanting to take what we can from earlier scholars, while recognizing the often harmful assumptions that undergird much of their work. Specifically in this case, Durkheim turns to naturism in order to prove that it is not, in fact, the most primitive form of religious behavior; still, his insights offer an interesting lens through which to reflect upon our discussion of Emerson. Importantly, I am *not* claiming that *Nature* is a form of Durkheimian naturism; rather, there is considerable overlap between the two, and Durkheim’s observations may help clarify some of the remaining ambiguity in Emerson’s essay.

Durkheim’s naturism is predicated on the reality of experience, that is, while speaking of Max Müller, presented as the seminal figure in the analysis of naturism, he claims that, “it is axiomatic that religion rests on an experience from which it draws its entire authority,” and, soon after, that religion arises “not as a kind of vague and confused dreaming but as a system of ideas and practices well grounded in reality.” (Durkheim 1995, 70) These experiences match well with Emerson’s, although Durkheim remains ever more reserved than the enthusiastic American: “Man cannot enter into relations with nature without gaining a sense of its infinity and its immensity ... It surpasses him in every direction. Beyond the spaces he sees, there are others that stretch out limitlessly; each moment of duration is preceded and followed by a time to which no limit can be set; the

flowing river manifests an infinite force, since nothing exhausts it.” (Durkheim 1995, 72)

While the details of Durkheim’s detour into the roots of naturism, and its dependence upon language for its development can be passed over for our purposes, his critique echoes the unease spoken by Emerson: if religious sentiment is based upon experience, observation, and interpretation of nature, and if nature is taken as a guide for human action, “it becomes inexplicable that religious thought should have survived the first tests made, and unintelligible that religious thought has been maintained. . . . If the point of religion was to give us a representation of the world that would guide us in our dealings with it, then religion was in no position to carry out its function, and humanity would not have been slow to notice that fact.” (Durkheim 1995, 77) Remember Durkheim’s purpose—he is attempting to disprove certain claims about religion; we are not. As such, his insistence that naturism “fails” in some essential way is not of as much interest as his isolation of the locus of anxiety in a disparity between what is externally observed in nature and our ability to turn those observations into a livable morality. This gap is further highlighted in the difficulty hinted at above in resolving the eternal flux and tension of the natural world:

We talk about the amazement that men must have felt as they discovered the world. But it is a regularity shading off into monotony that above all characterizes the life of nature. Every morning, the sun climbs the horizon, and every evening it sets; every month, the moon completes the same cycle; the river flows uninterruptedly in its bed; the same seasons periodically bring back the same sensory experiences. Some unexpected event occurs here and there, no doubt: The sun is eclipsed, the moon disappears behind the clouds, the river floods. But these passing disturbances can never give birth to anything but equally passing impressions, the memory of which is erased after a time. (Durkheim 1995, 81)

Emerson, of course, argues that these perceptions are far from passing, that instead they are revelatory of eternal truth being glimpsed, as it were, through the clouds obscuring the lunar landscape.

Interestingly, Emerson offers the seeds of a solution to these tensions, although he is never able to fully commit to it, in spite of stating it several times within the text of *Nature*, both implicitly and explicitly. Initially, Emerson's description of evocative nature is tied to a misreading of the landscape, an ignoring of certain bits of knowledge in preference to an intuitive perception of the whole:

The charming landscape which I saw this morning is indubitably made up of some twenty or thirty farms. Miller owns this field, Locke that, and Manning the woodland beyond. But none of them owns the landscape. There is a property in the horizon which no man has but he whose eye can integrate all the parts, that is, the poet. This is the best part of these men's farms, yet to this their warranty-deeds give no title. (Emerson 1981, 10)

As the essay progresses, the force of a unifying whole becomes more explicit, first in our understanding of language itself, where "the same symbols are found to make the original elements of all languages," and where nature, as reflected in these symbols the alpha and omega of perception: "and as this is the first language, so is it the last." (Emerson 1981, 21) This unity emerges as a set of mirrored reflections, a variety on "age-old theory of correspondence between the human project and its cosmic referent, between microcosm and macrocosm," (Albanese 2007, 164) where "is especially apprehended the unity of Nature,—the unity in variety,—which meets us everywhere. All the endless variety of things make an identical impression. ... A leaf, a drop, a crystal, a moment of time, is related to the whole, and partakes of the perfection of the whole. Each particle is a microcosm, and faithfully renders the likeness of the world." (Emerson 1981, 30) Further, and soaringly,

Each creature is only a modification of the other; the likeness in them is more than the difference, and their radical law of one organization, holds true throughout nature. So intimate is this Unity, that, it is easily seen, it lies under the undermost

garment of Nature, and betrays its source in Universal Spirit. For it pervades Thought also. Every universal truth which we express in words, implies or supposes every other truth. *Omne verum vero consonant*. It is like a great circle on a sphere, comprising all possible circles; which, however, may be drawn and comprises it in like manner. Every such truth is the absolute End seen from one side. But it has innumerable sides. (Emerson 1981, 30–31)

This unity is compelling for Emerson, but it also is the final move that leads him to doubting the presence of the exterior world: there is something about the ultimate unity of reality that is anxiety-provoking, something about the monism that he seems to move towards that must, in the end, be resisted. Indeed, after this florid passage, Unity—as a proper noun—doesn’t appear again in *Nature*, and the references to the concept are focused more on the gap between nature and humanity: “the reason why the world lacks unity, and lies broken and in heaps, is, because man is disunited with himself.” (Emerson 1981, 48) This later weakening of the earlier Unity is what allows other commentators to claim, for example, that “Emerson regarded Nature as at once the radically Other and the gateway to ourselves.” (Dunlap 2004, 47) In doing so, the unity—the connectedness that would allow both ourselves and the radically Other to exist within the single container of a Nature writ large—is lost.

Finally, Durkheim reminds us that the spiritual observations and commitments of a time are not unrelated to the social. Emerson exists very much at an important moment in American history, when the relationship between rural and urban, between the farm and the city, is changing, a topic already encountered in the opening chapter’s discussion of Sylvester Graham. He hungers for both: while he lightly chides city folk for supposing “that the country landscape is pleasant only half the year,” (Emerson 1981, 15) he praises the inventions of industrial age: speaking of man, Emerson writes

He no longer waits for favoring gales, but by means of steam, he realizes the fable of Aeolus's bag, and carries the two and thirty winds in the boiler of his boat. To diminish friction, he paves the road with iron bars, and, mounting a coach with a ship-load of men, animals, and merchandise behind him, he darts through the country, from town to town, like an eagle or a swallow through the air. By the aggregate of these aids, how is the face of the world changed, from the era of Noah to that of Napoleon! (Emerson 1981, 13)

And, in spite of seeing that his explorations of nature “may suggest the advantage which the country-life possesses, for a powerful mind, over the artificial and curtailed life of the cities,” Emerson reassures us that

We know more from nature than we can at will communicate. Its light flows into the mind evermore, and we forget its presence. The poet, the orator, bred in the woods, whose senses have been nourished by their fair and appeasing changes, year after year, without design and without heed,—shall not lose their lesson altogether, in the roar of cities or the broil of politics. (Emerson 1981, 23)

The urban, then, poses no real threat to our spiritual development—either as people or as a nation. Still, a challenge remains to retain our ability to access nature, to stay, if you will “in touch” with the depths of the natural world.

There are several gravitational points at work here, around which various considerations orbit: does the natural world, on the one hand, represent a set of patterns providing a model for human development or, on the other, a set of forces available for mastery by the human mind? Do we emulate the rhythms of the natural world, struggling to decode the relevance of its messages for our current challenges, or do we see it as a resource, available to us both physically and spiritually, and available for our control? And, what is the nature of our relations? Are we masters-in-waiting of nature? If so, how do we explain the awe, the sublime, the terror and the passion that it inspires?

These are the questions that form the backdrop against which American environmentalisms emerge, a movement that is only possible once the environment

becomes both geographically exhausted and problematic; that is, once the push of European settlers (and, by now, their descendants) has reached the Pacific coast and gazed backwards across the mountains, across the vast prairie, back towards the fast-growing urban sprawl that hugged the Atlantic, a question emerged of where to go from here? Decades were spent filling in the gaps, or abandoning the areas deemed inhospitable in their entirety (or, in a move that should surprise nobody, such areas were set aside as the final destination of indigenous populations removed from their more fecund and habitable homes into the dust and rock of the western plains). But the two forces were irreconcilable: the populations kept expanding and the amount of land, finally, after centuries of exploration and cultivation, had been mapped from end to end. In such a situation, the land itself was soon to become problematic in entirely new ways: no longer was the issue one of how best to expand the borders of the civilized across the dangerous wild; instead, the challenge was how to best manage, exploit, and pillage that land to ensure its service to the expanded population: how to mine it, how to dam it, how to extract building materials from its forests, how to blast through its inconvenient contours in service of a network of roads. These are the concerns that define our next chapter, and specifically its focal point, the Scottish immigrant John Muir.

Walking the World

*When I was a boy in Scotland I was fond of everything that was wild,
and all my life I've been growing fonder and fonder of wild places and
wild creatures.*

John Muir, *Boyhood in Scotland*

The bare outlines of the first half of John Muir's life are as follows: born in Dunbar, Scotland on April 21st, 1838; emigrated to America—specifically, a farm in Wisconsin—in 1849; enrolled in the University of Wisconsin-Madison for two years in the early 1860s. This was followed with several years of wandering the Canadian wilderness working as a laborer until he moved to Indianapolis, apparently well-prepared to settle into a life of industry, having been hired as something between a foreman, tinkerer, and lead engineer. It was not to be. In March of 1867 an accident nearly cost him his sight and provided the impetus for dramatic change: spending six weeks in a darkened room, unsure if he would ever regain his vision, Muir realized he was drawn to a different life, one located outside of the walls of either academia or the factory; indeed, outside any walls at all. Once his vision returned, Muir decided he would walk from Indiana to Florida, hoping there to gain passage on a ship to South America to further his desire to explore the Amazon. He did walk—roughly 1,000 miles—but contracted malaria in Florida, halting his progress. Not fully recovered, Muir changed direction, turning instead to California,

where he would spend most of the rest of his life.

Muir arrived in San Francisco in March of 1868, and immediately left the urban environs to see Yosemite which became a focal point for many of his efforts. The rest of his life was spent moving between the true wild—hiking the Sierra Nevada's, exploring the Alaskan glaciers, wandering the backwoods of Yosemite itself—and a wide-ranging set of social activities that included a deep engagement with what we would today term environmental politics. Muir was instrumental in the movement to create the National Park system, was a leading voice in the emerging environmental debate of his time, and was one of the founders of the Sierra Club; along with all this, he was a prolific writer, publishing hundreds of essays and roughly a dozen books (many were collections of essays, some were collections of previously unpublished material). Muir died from complications related to pneumonia on December 24th, 1914, survived by two daughters; his wife of twenty-five years had passed nearly a decade before, in 1905.

Add to this a sprinkling of detail: the looming presence of a religiously domineering father; a childhood marked by masculine competitions of physical endurance and violence inflicted by both peers and parents; an aptitude—even a genius—for mechanical engineering resulting in a host of fascinating contraptions and, through a competition in the Wisconsin state fair, both a scholarship that enabled his formal studies (never completed) and the introduction to Jeanne and Ezra Carr, who would become lifelong friends, confidants, and benefactors; a level of self-discipline that enabled a near ascetic lifestyle; a set of iconic, almost unbelievable, experiences that combined danger and soaring moments of communion (holding on to a pine tree as it is whipped to and fro

in a storm, rushing out to “ride” an avalanche down a mountain, risking his—and his lovable dog, Stickeen’s—life on the side of an Alaskan glacier); and a series of economic opportunities that would likely have led to great wealth bypassed in favor of greater direct interaction with the natural world. Two themes emerge that I want to particularly highlight: first, Muir’s stance towards nature—ultimately, his religion—was one of experience, of a singular attention focused on observing the world around him through both his eyes and his body. The equation of nature and religion is quite explicit in Muir, whose stance towards the sacred is summarized by Donald Worster, one of his biographers, like this:

“God” for Muir was a deliberately loose and imprecise term referring to an active, creative force dwelling in, above, and around nature. Continuously animated by that divine force, every part of the natural world was in constant flux—the earth moving under foot, glaciers flowing down mountainsides, plants and animals evolving and spreading. Always the flux was purposeful. Always it moved toward beauty. Always and everywhere it was holy. (Worster 2008, 8)

This view of an always changing, always moving sacrality is the second theme: Muir’s life is extraordinary in its wandering, in the compulsion he obeyed to move through the land itself, usually on foot, and usually alone. As Ehrlich notes (quoting from a posthumous collection), “In his late, undated journal fragments, he wrote: ‘Not like taking the veil—no solemn abjuration of the world. I only went out for a walk, and finally concluded to stay out till sundown, for going out, I found, was really going in.’” (Ehrlich 2000, 9)

So much, then, for the skeleton outline. I want to en flesh this overview by focusing on a few themes from Muir’s life, selecting the metaphor quite intentionally as one of the key tropes in Muir’s writing is the relationship between nature and body. Muir’s asceticism is the stuff of legend—he was known to set out for a multi-week journey through the backwoods of the mountains with merely some water, some crushed tea, and a couple

loaves of crusty bread. The fondness with which Muir saw these deprivations emerges in nostalgic bloom in some of his later writings, for example: “Long ago I made these Sierra trips, carrying only a sackful of bread with a little tea and sugar and was thus independent and free, but now that trails or carriage roads lead out of the Valley in almost every direction it is easy to take a pack animal, so that the luxury of a blanket and a supply of food can easily be had.” (Muir 1912, 39) Here, though, it is not the Spartan conditions that are my focus, rather, the first of the rituals from Muir’s life that I want to examine is the way in which mobility—in his case, walking the earth—was a significant factor in his well-being, best understood as a methodology of self-healing, a solitary practice that time and time again served to refresh and renew his body and soul. While his voyage from Indiana to Florida is the first of the major undertakings of this kind, it was not new behavior for Muir—not only was his boyhood full of long runs and walks in the Scottish country side, but retreats into the wilderness continually were seen as a source of restoration and invigoration. He speaks of his time as a boy:

in the winter, when there was but little doing in the fields, we organized running matches. A dozen or so of us would start out on races that were simply tests of endurance, running on and on along a public road over the breezy hills like hounds, without stopping or getting tired. The only serious trouble we ever felt in those long races was an occasional stitch in our sides. ... We thought nothing of running right ahead ten or a dozen miles before turning back. (Muir 1913, 8)

This deepened as he aged. Consider this passage of a type so common in his writing as to be unremarkable: “Next day I made up a package of bread, tied my notebook to my belt, and strode away in the bracing air, every nerve and muscle tingling with eager indefinite hope, and ready to give welcome to all the wilderness might offer. The plushy lawns staffed with blue gentians and daisies soothed my morning haste, and made me linger; they

were all so fresh, so sweet, so peaceful.” (Muir 1888, 10)

There is a deeper connection with Muir’s roots here as well: the need to transform spiritual impulse into physical action has a decidedly Protestant undertone, a compulsion not just to see or bask in God’s glory, but rather to enact it upon the external world, to see it as a product of physical exertion that leaves God’s mark upon the world through the effort of a human vessel. While this instinct for Muir may be quintessentially Scottish, it marks him also as very American, as part of the narrative of the pioneer, the hard-working industrialist, the individual who is able to, through work, fulfill the destiny promised by both the magnificence of the unfolding continent and divine providence. For Muir, the most sublime moments are those that come from effort—seeing a waterfall is one thing, clambering along a three inch ridge directly below the full force of the rushing water brings a knowledge that goes beyond the visual. This is true in less death-defying moments as well—close attention to the flowers reveals the most minute movements of insects, bees, and butterflies, all combining to demonstrate without reservation the beauty of God’s plan. “One must labor for beauty as for bread, here as elsewhere.”(Muir 1912, 8)

In 1863, at a moment when he was faced with deciding whether his career would continue within the world of the university, Muir found himself confused with what the proper response to the very real prospect of civil war should be. His reaction was never fully clear, always a mix of a resignation to a notion of national duty and a clear reluctance to commit himself to the violent brutality of the war effort. The initial solution, arrived at in consultation with the Carrs, was to alter his academic course to study medicine—being a field surgeon was, for Muir, an acceptable compromise. However, “by the end of the

school year Muir was thin and exhausted, the result of his customary impoverished circumstances and his increasing anxiety about a proper personal response to the war.” (F. Turner 1985, 107) Having decided to spend the summer walking through the borderlands of the American-Canadian frontier, Muir himself writes “I am not so well as I was last term, I need a rest. Perhaps my tour will do me good, though a three or four hundred mile walk with a load is not, at least in appearance, much of a rest.” (Badè 1924, 32) Yet, it worked: “when he emerged near the end of July he had regained his health and spirits in hiking the valley lands, clambering about the cliffs, poking through the green dells.” (F. Turner 1985, 107) The healing was more than physical—the time that summer also opened up new possibilities for Muir, new avenues that in the relative bustle of school life seemed impossible. As Turner interprets it, this time allowed Muir to ask, “what if you could simply escape the war, mounting social pressure to settle down, family squabbles—all of it—and simply wander off into the American wilderness?” (F. Turner 1985, 108) Note Turner’s nationalistic attribution: Muir had little regard for such boundaries, and indeed spent many of those months wandering well north of the territorial limits of the United States. Nature, for Muir, was an opening, a space that allowed for possibilities unavailable in the world of the social, and it was these possibilities that seemed to allow him to regain his energy and his passion for life.

The notion of these wanderings as an “escape” is intriguing, but ultimately more a space for conjecture than firm conclusion. Muir was a prolific, if reluctant, writer and there is virtually no time period in his life that is not the subject of extraordinary documentation and reflection in his writings and/or his voluminous correspondence. A notable exception

begins in late Spring of 1864, when he began a long traipse through the Canadian woods, a time referred to by Ehrlich as Muir's "lost years." Turner summarizes this lacuna, commenting that,

for a man who had so astonishing a recall of detail and whose voluminous notebooks were carefully preserved through years of hard travel and perilous adventure to form at last the bases of every book he wrote, there is not much here. He did take botanical notes from the Canadian period, but he left them with a friend in Indianapolis in 1867 and never asked for their return. It is possible that he made some further travel notes that were subsequently destroyed by fire, but Muir never cared to go back and fill in the gaps. (F. Turner 1985, 114)

While accurate, this is a little misleading. Muir's surviving words on this period are limited to a fragment regarding his difficulty in explaining the idea of someone wandering the backwoods in search of plants—he was taken “for a government official of some kind, or minister, or pedlar [sic].” (Badè 1924, 40) and a single sentence commemorating his discovery, “far in the dark maple woods,” of people who shared his hometown of Dunbar, Scotland. However, his practice of meticulously dating and identifying the location of the plant samples he gathered during these treks does allow his first biographer, William Frederic Badè to reconstruct the time thusly:

In April he was already wading about in Canadian swamps, and by the month of May he had penetrated northward as far as Simcoe County. On the 18th of that month he started—on a three weeks' ramble through Simcoe and Grey Counties, walking an estimated distance of about three hundred miles through the townships of Guillimbury, Tecumseh, Adjala, Mono, Amaranth, Luther, Arthur, Egremont, Proton, Glenelg, Bentinck, Sullivan, Holland, and Sydenham. (Badè 1924, 40)

That is—and Turner is explicitly aware of the existence of this as well—while we may not have Muir's own words to support us, there is a great deal of information about where he was and what he was doing: Muir's Canadian wanderings are not blank and unknown, rather they stand without much self-reflection from the man himself, something which

marks them as unusual in his archive.

This time of isolation lasted into the early Fall, when he met up with his brother Dan near Niagara Falls. The brothers found employment at a local mill and factory (producing at the time broom handles and related parts), and Muir seemed to have emerged from the wild healthier, but also resigned to a life in the social world: as such, it seems that Muir himself may have seen his trip through Canada as a last hurrah of sorts, a final time in his beloved woods before he settled down to a life of lathes and lumber, machines and marriage. This was helped by his clear aptitude for mechanical engineering and specifically for what might today be called process improvement. Repeatedly in his “professional” life (that is, the times spent in various manufacturing and/or farming endeavors), Muir would become obsessed with a problem of productivity and immerse himself in designing a (usually mechanical) set of solutions. So, in early 1866, while working at a small-town mill in Canada,

he had perfected his designs for the improved lathe and also for a machine that bored and drove rake teeth. He set them in operation, and they worked famously. So absolute was the improvement in production that Muir turned 23,000 of the 30,000 broom handles in a single day.

Muir’s own reflections on these efforts, from a letter to Jeanne Carr, are revealing when subjected to a close reading:

I have been very busy of late making practical machinery. I like my work exceedingly well, but would prefer inventions which would require some artistic as well as mechanical skill. I invented and put in operation a few days ago an attachment for a self-acting lathe, which has increased its capacity at least one third. We are now using it to turn broom-handles, and as these useful articles may now be made cheaper, and as cleanliness is one of the cardinal virtues, I congratulate myself in having done something like a true philanthropist for the real good of mankind in general. What say you? I have also invented a machine for making rake-teeth, and another for boring for them and driving them, and still

another for making the bows, still another used in making the handles, still another for bending them, so that rakes may now be made nearly as fast again. Farmers will be able to produce grain at a lower rate, the poor get more bread to eat. Here is more philanthropy; is it not? I sometimes feel as though I was losing time here, but I am at least receiving my first lessons in practical mechanics, and as one of the firm here is a millwright, and as I am permitted to make as many machines as I please and to remodel those now in use, the school is a pretty good one. (Muir and Badè 1916, 1)

There is a decided ambiguity here, a recognition that it may not in the end be enough that, in Turner's words, "the world would perhaps be better swept now." (F. Turner 1985, 118)

While it is impossible to know for sure, it seems reasonable that this instinct of Muir's was part of the motivation for his leaving the Canadian wilds, this time for the bustling industry of Indianapolis, where he "he quickly found work. The firm of Osgood and Smith was the oldest manufactory in the city and the year before Muir's arrival had bought the patent for the infamous Sarvan carriage wheel." (F. Turner 1985, 121) Although still technically employed as a sawyer, Muir was engaged by Osgood and Smith in December of 1866 to produce a "time and motion" study of the factory. What he saw here was striking in its prescient anticipation of the economics of Fordist America yet to come: "without formal training and without an abundance of actual manufacturing experience, Muir had grasped the vision of the total factory as a machine itself, where laborers, machines, and products were interchangeable, smoothly functioning parts." (F. Turner 1985, 124) We have at this point a Muir that was never to be, but seems quite possible: he is poised on the edge, not for the last time in his life, of economic freedom, of joining the burgeoning ranks of the industrial capitalists, and seemingly destined for great heights in their company.

The Threat of Blindness and Seeing Nature

The vision isolates, separates the visionary from the "ordinary" life to which she or he had formerly been accustomed. It is the prelude to a period of uncertainty, of disorientation, of the suspended animation of the self. The time is troubled indeed but culminates in a pivotal inspiration that is itself a prelude to a renaissance, to the reentry of a self revived and rechristened into something of the same—if by no means entirely the same—life from which she or he had been removed.

James D. Faubion, *The Shadows and Lights of Waco*

*All that is gold does not glitter
Not all those who wander are lost*

J. R. R. Tolkien, *The Fellowship of the Ring*

Instead, on March 6th, 1867, Muir suffered an accident that changed everything when a file slipped from his hand and impacted his eye.

After the first shock was over I closed my eye, and when I lifted the lid of the injured one the aqueous humor dripped on my hand the sight gradually failed and in a few minutes came perfect darkness. "My right eye is gone," I murmured, "closed forever on all God's beauty." At first I felt no particular weakness. I walked steadily enough to the house where I was boarding, but in a few hours the shock sent me trembling to bed and very soon by sympathy the other eye became blind, so that I was in total darkness and feared that I would become permanently blind. (Badè 1924, 52)

While the fears of blindness proved unfounded, recovery meant spending over a month in a darkened room as his prognosis slowly improved. As he healed, Muir re-evaluated the components of his current life, and decided upon a radical solution: he would, instead of returning to the factory, "ready manfully to look that busy world in the face and get on with his career," return "to his plans for a walking tour of the southern states and from there to South America. He read and was charmed by an illustrated brochure of

California's Yosemite Valley—there, too, were mysteries he might experience.” (F. Turner 1985, 127)

This was a moment of epiphany, a complete re-ordering of his priorities, and parallel inversion of the process of seeing described in the epigraph with which this section opens: Muir's new life was brought into existence by terror at the possibility of losing his vision of nature, a sight that always saw in excess of what was “really there.” It was this fear that propelled him out of the increasingly successful comforts of Indianapolis and into the American wild. Muir's choice was unusual for his time, although clearly not as unusual as it would be today: in the late 1800s, it was still possible to wander the land, to roam across territory that had not yet been fully claimed, plotted, and industrialized by the crisscrossing boundaries of the American road system. So, Muir's journey, which took him through Kentucky and Tennessee, across Georgia and into Florida, was made largely across back country, along paths and open fields, using natural landmarks—rivers and mountains, mostly—to guide his way. As was his wont, Muir would downplay the dangers of the road, recounting encounters with brigands and roughs with a self-deprecating humor that attributed his continued survival more to his appearance, easily confused with “a poor herb doctors a common occupation in these mountain regions” (Muir and Badè 1916, 9) than to any bravery on his part. While some of this is humility, much of it is simple truth: Muir traveled with only the barest of provisions, indeed, at the very start of his walk, he encountered a would-be thief on horseback,

who soon showed that he intended to rob me if he should find the job worth while [sic]. After he had inquired where I came from, and where I was going, he offered to carry my bag. I told him that it was so light that I did not feel it at all a burden; but he insisted and coaxed until I allowed him to carry it. As soon as he had gained

possession I noticed that he gradually increased his speed, evidently trying to get far enough ahead of me to examine the contents without being observed. But I was too good a walker and runner for him to get far. At a turn of the road, after trotting his horse for about half an hour, and when he thought he was out of sight, I caught him rummaging my poor bag. Finding there only a comb, brush, towel, soap, a change of underclothing, a copy of Burns's [sic] poems, Milton's Paradise Lost, and a small New Testament, he waited for me, handed back my bag, and returned down the hill, saying that he had forgotten something. (Muir and Badè 1916, 8)

Muir possessed a remarkable confidence that he would never fall to harm from the natural world—the dangers of weather, predators, loose rocks and the like never troubled him, often only deemed worthy of a passing reference, for example in late September he found himself moving through the “Chattahoochee bottom lands” in Georgia where, after a labored crossing of a swift running river, “[I] sauntered on southward as soon as I was dry. Rattlesnakes abundant. Lodged at a farmhouse. Found a few tropical plants in the garden.” (Muir and Badè 1916, 12)

Muir was not the first to explore America in this manner; indeed, as he wound his way southward, his path crossed that of William Bartram, who had over 100 years prior spent four years traveling on foot in the same region. Bartram was, “like Muir excited by the language of birds, the hunting habits of spiders, and the secret life of plants” (F. Turner 1985, 141) Indeed, Bartram's rapture at discovering (what was to him) a new species of rhododendron mirrors Muir's own constantly ecstatic accounts of biodiversity throughout his walk. Bartram, however, was quite ambivalent at times with regards to his solitude, and the long periods of loneliness his migrations required. To Bartram (and, quite emphatically, *virtually never* to Muir), “the mountains seemed ‘dreary,’ even threatening. Bartram took the opportunity to observe that perhaps men were gregarious beings whose delight was in civilization.” (Nash 1967, 55) These thoughts were short-lived: Bartram

found himself on the edge of a cliff “from which he could see the sweep of the wilderness to the west,” (Nash 1967, 55) This moment of encounter dispelled all fear and doubt from his mind, and serves as a model for many moments on Muir’s wanderings when a question is answered through a sudden revelation of the natural. This notion of revelation, of truth written in nature waiting to be discovered, may also be traced back to Bartram who was, according to Nash, the earliest American writer to attribute to nature the quality of *the sublime*, a term that was to become key in Muir’s musings on nature. Nash claims that Bartram’s journals

mark the first extensive use of that term in American letters. Instances appear on almost every page of his *Travels*. Camping beside Florida’s Lake George, Bartram admitted being “seduced by those sublime enchanting scenes of primitive nature,” and in the Carolina wilderness he “beheld with rapture and astonishment, a sublimely awful scene of power and magnificence, a world of mountains piled upon mountains.” For him, as for the European aesthetes, the sublime in nature was linked with God’s grandeur, and Bartram frequently praised “the supreme author of nature” whose “wisdom and power” were manifested in wilderness. (Nash 1967, 54, emphasis added)

We have encountered the sublime before with Emerson; its first use in *A Thousand-Mile Walk to the Gulf* shall serve as illustrative of Muir’s usage. Here is his entry for September 10th, 1867:

Escaped from a heap of uncordial kindness to the generous bosom of the woods. After a few miles of level ground in luxuriant tangles of brooding vines, I began the ascent of the Cumberland Mountains, the first real mountains that my foot ever touched or eyes beheld. The ascent was by a nearly regular zigzag slope, mostly covered up like a tunnel by overarching oaks. But there were a few openings where the glorious forest road of Kentucky was grandly seen, stretching over hill and valley, adjusted to every slope and curve by the hands of Nature the most sublime and comprehensive picture that ever entered my eyes. Reached the summit in six or seven hours — a strangely long period of up-grade work to one accustomed only to the hillocky levels of Wisconsin and adjacent States. (Muir and Badè 1916, 7)

Note both the preference of the woods to lukewarm human companionship (he is referring

to a “thrifty Tennessee farmer,” who had been overly reluctant in Muir’s eyes to provide food and shelter the night before), and the sense of purpose in the revelation of the sublime: the hills are not solely a geologic process, but are also shaped by “the hands of Nature.”

This is not to say that every moment outside was a moment of unbridled joy for John Muir: in addition to the physical deprivations of the journey, he was no stranger to desolation, nor to loneliness. For someone so steeped in botanical lore, the further south Muir traveled, the more foreign and indecipherable the landscape became. Heading toward Savannah, and edging towards a marshy swampland, the like of which he had never encountered, Muir writes

Am made to feel that I am now in a strange land. I know hardly any of the plants, but few of the birds, and I am unable to see the country for the solemn, dark, mysterious cypress woods which cover everything.

The winds are full of strange sounds, making one feel far from the people and plants and fruitful fields of home. Night is coming on and I am filled with indescribable loneliness. Felt feverish; bathed in a black, silent stream; nervously watchful for alligators. (Muir and Badè 1916, 13)

This is an important moment in Muir’s corpus: his writings are overflowing with his supreme confidence in the natural world, with his remarkable lack of any sense of discomfort, danger, or desperation. Here we find him made to feel “dreadfully lonesome” (Muir and Badè 1916, 14) by his exposure to the strange and unknown, the eerie. Note the specific source of his difficulties: it is the distance from home, the foreign nature of the fauna that make him ill at ease. Addressing this situation is not accomplished through social interactions: during his journey, Muir has occasion to interact with a wide range of people, usually in a supplicant’s role, and while he enjoys some more than others, finds

some better conversation partners, and is more or less impressed or appalled by the level of hospitality, other than the addressing of core creature comforts—a bed, a meager meal—he finds little true solace in these interactions. Instead, he turns back towards nature itself, or more properly, towards nature’s borders, towards the blurry edge that separates nature from the wild and, by treading there a while, finds ways to ever expand the zone of his comfort outwards, away from the cultivated. This is a process of “getting comfortable,” a gaining of local knowledge that allows him to assimilate the unknown into the known.

The first example of this comes directly after his feeling “dreadfully lonesome and poor,” referred to above. He has reached Savannah, but is near the end of his funds, and additional monies, due via Western Union from his brother in Wisconsin, have not yet arrived. After a single night in “the meanest looking lodging-house that I could find,” (Muir and Badè 1916, 14) he discovers the Bonaventure graveyard. Muir is delighted by Bonaventure, and completely seduced by its foreign treasures:

Bonaventure to me is one of the most impressive assemblages of animal and plant creatures I ever met. I was fresh from the Western prairies, the garden-like openings of Wisconsin, the beech and maple and oak woods of Indiana and Kentucky, the dark mysterious Savannah cypress forests; but never since I was allowed to walk the woods have I found so impressive a company of trees as the tillandsia-draped oaks of Bonaventure. (Muir and Badè 1916, 15)

It is more than the trees, even if Muir claims that the “noble avenue of live-oaks” are “the most magnificent planted trees I have ever seen,” that fascinates Muir. It is the liminality of the space, the zone that encompasses both the living and the dead that draws his attention; at first this is a result of the ongoing reclamation of the land by natural processes, the way that “even those spots which are disordered by art, Nature is ever at work to reclaim, and to make them look as if the foot of man had never known them;” (Muir and

Badè 1916, 14) but Muir saves his most soaring language for an extended meditation on the relationship between life and death:

I gazed awe-stricken as one new-arrived from another world. Bonaventure is called a graveyard, a town of the dead, but the few graves are powerless in such a depth of life. The rippling of living waters, the song of birds, the joyous confidence of flowers, the calm, undisturbable grandeur of the oaks, mark this place of graves as one of the Lord's most favored abodes of life and light.

On no subject are our ideas more warped and pitiable than on death. Instead of the sympathy, the friendly union, of life and death so apparent in Nature, we are taught that death is an accident, a deplorable punishment for the oldest sin, the arch-enemy of life, etc. Town children, especially, are steeped in this death orthodoxy, for the natural beauties of death are seldom seen or taught in towns.

Of death among our own species, to say nothing of the thousand styles and modes of murder, our best memories, even among happy deaths, yield groans and tears, mingled with morbid exultation; burial companies, black in cloth and countenance; and, last of all, a black box burial in an ill-omened place, haunted by imaginary glooms and ghosts of every degree. Thus death becomes fearful, and the most notable and incredible thing heard around a death-bed is, "I fear not to die."

But let children walk with Nature, let them see the beautiful blendings and communions of death and life, their joyous inseparable unity, as taught in woods and meadows, plains and mountains and streams of our blessed star, and they will learn that death is stingless indeed, and as beautiful as life, and that the grave has no victory, for it never fights. All is divine harmony. (Muir and Badè 1916, 15)

Muir is not arguing against death here as much as he is suggesting that *everything* is properly seen as life: the harmony he ends with is one of the living, of the present moment, and of the importance of not resisting that which is destined to happen in the natural world. Instead of—as the human caretakers of Bonaventure do—erecting fences between highly organized gravesites or structures designed to shield the graves from the rain and sun, the proper relation to nature is to live in it, abiding by its irreversible rules. Indeed, such construction is, in the end, useless:

It is interesting to observe how assiduously Nature seeks to remedy these labored art blunders. She corrodes the iron and marble, and gradually levels the hill which is always heaped up, as if a sufficiently heavy quantity of clods could not be laid

on the dead. Arching grasses come one by one; seeds come flying on downy wings, silent as fate, to give life's dearest beauty for the ashes of art; and strong evergreen arms laden with ferns and tillandsia drapery are spread over all — Life at work everywhere, obliterating all memory of the confusion of man. (Muir and Badè 1916, 15)

This is not an isolated moment attributable more to Muir's exhaustion than deeper reflections. Much later, railing against the construction of the Hetch Hetchy dam (a topic we will discuss in more detail below), he returns again to this notion of a false death, where humanity interferes with the natural cycle by creating an artificial context within which life is eliminated. Here, he is arguing against the notion that the dam would create "a crystal-clear lake," adding to the beauty of the area. Muir writes that such a lake would "be full only a month or two in the spring, when the snow is melting fast." The rest of the year, the water would gradually drain, "exposing the slimy sides of the basin . . . , with the gathered drift and waste, death and decay of the upper basins, caught here instead of being swept on to a decent natural burial along the banks of the river or in the sea. Thus the Hetch Hetchy dam-lake would be only a rough imitation of a natural lake for a few of the spring months, an open sepulcher for the others." (Muir 1912, 48)

As he reflects on the graveyard in Georgia, Muir is calling for a certain kind of attention, a focus from us in our encounter with nature. Note that he is not calling for people to be active, not calling for them to participate in some grand scheme of outdoor preservation or cultivation, but rather is claiming that "the apparently irreconcilable opposition between life and death was in truth resolved by simply *looking* at nature itself. If you looked with a steady, calm regard, you could not find the dread opposition," (F. Turner 1985, 144) instead this sort of perception led to the recognition that all dissolved

into a sacred unity. Turner makes much of this moment, seeing in it “a major breakthrough against the inhibiting intellectual and spiritual influences of his childhood and adolescence, ... [whose] implications were to prove incalculably great.” (F. Turner 1985, 145) And, even loftier:

Now that he sensed powerfully, immediately the oneness of existence, the way was prepared for the last vestiges of his orthodox Christianity to fall away. Not immediately, however flashing this graveyard meditation, but surely and steadily, leaving at last no place for the old fear of death in a spirit so filled to its capacity with wonder. (F. Turner 1985, 147)

This oversteps, but perhaps not by too much. In truth, Muir’s rebellion against his father’s strict orthodoxy was long in developing, and his realizations of unity in nature are found from his very earliest writings. Indeed, Muir’s first printed article, which appeared in December of 1866 in *The Boston Recorder*, detailed his encounter with *Calypso borealis* in a Canadian swamp. Towards the end of a day spent “struggling through tangled drooping branches and over and under broad heaps of fallen trees,” at a point “when the sun was getting low and everything seemed most bewildering and discouraging,” Muir sees the plant, “growing not in the ground but on a bed of yellow mosses in which its small white bulb had found a soft nest and from which its one leaf and one flower sprung. The flower was white and made the impression of the utmost simple purity like a snowflower.” (Badè 1924, 41) And then, revelation:

It seemed the most spiritual of all the flower people I had ever met. I sat down beside it and fairly cried for joy.

It seems wonderful that so frail and lowly a plant has such power over human hearts. This Calypso meeting happened some forty-five years ago, and it was more memorable and impressive than any of my meetings with human beings excepting, perhaps, Emerson and one or two others. ...

How long I sat beside Calypso I don’t know. Hunger and weariness vanished, and

only after the sun was low in the west I splashed on through the swamp, strong and exhilarated as if never more to feel any mortal care. (Badè 1924, 41)

While perhaps not as direct as his reverie at Bonaventure, this is clearly cut of the same cloth.

Fittingly, Muir decides—as much from economic necessity as from his attraction to the place—to create a haven in the cemetery in which to spend his nights. Eschewing even a blanket, Muir writes that “I used four of the bushes as corner posts for my little hut, which was about four or five feet long by about three or four in width, tied little branches across from forks in the bushes to support a roof of rushes, and spread a thick mattress of Long Moss over the floor for a bed.” Muir spends the better part of a week here, spending a few hours each day getting “acquainted with my bird neighbors in this blessed wilderness,” (Muir and Badè 1916, 16) before heading into town to see if his money has arrived and, when at last it does, he is off again on foot, completing his passage through Georgia until towards the end of October, he finally reaches the coast. Of his encounter with the ocean, he writes:

October 23. To-day I reached the sea. While I was yet many miles back in the palmy woods, I caught the scent of the salt sea breeze which, although I had so many years lived far from sea breezes, suddenly conjured up Dunbar, its rocky coast, winds and waves; and my whole childhood, that seemed to have utterly vanished in the New World, was now restored amid the Florida woods by that one breath from the sea. Forgotten were the palms and magnolias and the thousand flowers that enclosed me. I could see only dulse and tangle, long winged gulls, the Bass Rock in the Firth of Forth, and the old castle, schools, churches, and long country rambles in search of birds' nests. I do not wonder that the weary camels coming from the scorching African deserts should be able to scent the Nile.

How imperishable are all the impressions that ever vibrate one's life! We cannot forget anything. Memories may escape the action of will, may sleep a long time, but when stirred by the right influence, though that influence be light as a shadow, they flash into full stature and life with everything in place. For nineteen years my vision was bounded by forests, but to-day, emerging from a multitude of tropical

plants, I beheld the Gulf of Mexico stretching away unbounded, except by the sky. What dreams and speculative matter for thought arose as I stood on the strand, gazing out on the burnished, treeless plain! (Muir and Badè 1916, 22)

His walk, at first inspired by an accident that threatened to rob him of his sight and therefore of his ability to perceive the glories of nature, ends temporally displaced, in his childhood. Muir has walked over two thousand miles and has found himself a boy again in Scotland.

As tempting as it may be, the Freudian turn should, I think, be resisted or, at least, heavily modified. While it is seductive to see the imposing figure of Daniel Muir looming over John's life at every turn—and, certainly, his dominance over Muir's childhood cannot be overstated—it also, in the end, does a disservice to John himself. A striking feature of Muir's reflections on his life is a consistent lack of angst, of questioning his roots, of obsession with the shadow cast by his father. Whatever impact Daniel had on the young boy, John the adult emerges having found not only resolution or peace, but also an emotionally powerful connection to the spiritual whose familial roots he would never deny, even if their growth turned in a very different direction, towards a very different sun.

There may be a psychological process of transference at work here, the substitution of a harsh and judgmental God of the Old Testament for a sublime and peaceful presence but, if so, that transference is simultaneously a powerful healing, a transformation that allows Muir both clarity of vision and a compulsion to act. His returns to his boyhood are not the tortured reenactments of a man struggling against a long-dead father; they are instead the joyous recollections of the early seeds of his connection to the natural: his months spent wandering through America are the grown-up versions of his miles of

running as a boy, the ocean that beckons to him so strongly at the end of his journey is the same ocean that fascinated him so on the Scottish coast. If I am correct, then, it is not so much that Muir's wanderings reflect a search for something as that they are an enactment of sacred behavior, a ritualistic pilgrimage that has no spiritual goal outside of itself.

Heading West: Finding God, Glaciers, and Politics in California

That is what Big Sur will become—the frontier of the frontier, ... the furthest edge of the spirit of the West. ... This, in other words, was the final goal and destination of the American expansion and colonization of the West.

Jeffrey J. Kripal, *Esalen*

While his thousand mile walk has ended, his journey—and the text itself—continue well beyond this point: from here, Muir sails further down the coast into Florida, spends time in Cuba, and—most dramatically—nearly succumbs to a bout with malaria, from which he is not fully healed until early the following year. These events, along with the vagaries of shipping schedules, conspire to force him to change his original plan of sailing to South America; instead he finds passage first to New York City, and then to California, where (with various voyages of exploration elsewhere) he will reside and spend the rest of his days and where he will gain his greatest acclaim and influence.

Muir's explanation of how he ended up in California after the walk to the gulf is worth reproducing in full for the characteristic ease with which it dismisses the brush with

malaria and the long recovery period—while he would often revisit memories of earlier events, Muir was never one to dwell on such hardships:

When I set out on the long excursion that finally led to California I wandered afoot and alone, from Indiana to the Gulf of Mexico, with a plant-press on my back, holding a generally southward course, like the birds when they are going from summer to winter. From the west coast of Florida I crossed the gulf to Cuba, enjoyed the rich tropical flora there for a few months, intending to go thence to the north end of South America, make my way through the woods to the headwaters of the Amazon, and float down that grand river to the ocean. But I was unable to find a ship bound for South America—fortunately perhaps, for I had incredibly little money for so long a trip and had not yet fully recovered from a fever caught in the Florida swamps. Therefore I decided to visit California for a year or two to see its wonderful flora and the famous Yosemite Valley. All the world was before me and every day was a holiday, so it did not seem important to which one of the world's wildernesses I first should wander. (Muir 1912, 4)

Muir's arrival in San Francisco is retold numerous places, the punch line of which is his inquiry as to the nearest way out of town, and when pressed for a more specific destination, his answer of "to any place that is wild." (Muir 1912, 4) Apocryphal or not, the retelling of the story underscores its centrality to Muir's conception of his early life: the destination did not matter in the specific, rather the goal was to wander in the wilderness, wherever it may lead him.

It led to a place that would go on to define the next phase of Muir's life, into the Sierra Nevada mountains and specifically to the Yosemite Valley. Muir's first encounters with the Sierras—indeed, his first exposure to true mountains in his travels—is a revelatory moment where, out of "a lake of pure sunshine ... rose the mighty Sierra, miles in height, and so gloriously colored and so radiant, it seemed not clothed with light, but wholly composed of it, like the wall of some celestial city." Muir reinforces this sensibility, insisting that even "after ten years of wandering and wondering in the heart" of the mountains, "it still seems above all others the Range of Light." Light alone, however, is

not sufficient for the depth of Muir's relationship to the mountains: instead, he adds that, "no mark of man is visible upon it, nor any thing to suggest the wonderful depth and grandeur of its sculpture. None of its magnificent forest-crowned ridges seems to rise much above the general level to publish its wealth. No great valley or river is seen, or group of well-marked features of any kind standing out as distinct features." In other words, the Sierra Nevada mountains are both wild, untouched by the hands of humanity, but they are also full of promise, full of riches that may be encountered only by wandering through "the whole range five hundred miles long," through its "canons 2000 to 5000 feet deep, in which once flowed majestic glaciers, and in which now flow and sing the bright rejoicing rivers." (Muir 1912, 4–5) Our journey, which started with a loss of vision from a wound inflicted by a carpenter's tool, ends in wild light.

Muir's Yosemite is explicitly a holy place, a bursting forth of sacred presence into the world. Consider:

But no temple made with hands can compare with Yosemite. Every rock in its walls seems to glow with life. Some lean back in majestic repose; others, absolutely sheer or nearly so for thousands of feet, advance beyond their companions in thoughtful attitudes, giving welcome to storms and calms alike, seemingly aware, yet heedless, of everything going on about them. Awful in stern, immovable majesty, how softly these rocks are adorned, and how fine and reassuring the company they keep: their feet among beautiful groves and meadows, their brows in the sky, a thousand flowers leaning confidently against their feet, bathed in floods of water, floods of light, while the snow and waterfalls, the winds and avalanches and clouds shine and sing and wreathe about them as the years go by, and myriads of small winged creatures birds, bees, butterflies—give glad animation and help to make all the air into music. Down through the middle of the Valley flows the crystal Merced, River of Mercy, peacefully quiet, reflecting lilies and trees and the onlooking rocks; things frail and fleeting and types of endurance meeting here and blending in countless forms, as if into this one mountain mansion Nature had gathered her choicest treasures, to draw her lovers into close and confiding communion with her. (Muir 1912, 5)

Muir's desire to commune with this presence was the initial motivation for his wanderings,

and while his writings reflect a gradual diminishing of the holy exuberance of his youth in favor of more staid scientific description, he never lost the passion and the awe that we see here. The change is attributable to a movement in Muir's later days towards a more social arena which saw him engaged more and more deeply—and with quite conflicting emotions—in two forms of activism, one political and one intellectual. We will concentrate on the former momentarily; the latter is a reflection of his contributions in the fields of botany (more a product of his wide ranging travels and honed skills of close attention) and geology (where his observations were key in recognizing and theorizing about the existence and importance of glaciers).

When Muir first encountered the Yosemite valley, the role of glaciers in its formation was a hotly contested idea as was even the notion that glaciers were a suitable scientific phenomenon at all. The dominant view was that Yosemite was a product, not of glaciation, but rather of “a huge and sudden subsidence in which the valley floor sank due to the collapse of its support. Half Dome was the most spectacular and obvious evidence of this catastrophic event, the missing half having gone down with the rest of the valley.” (F. Turner 1985, 195) This view was most publicly supported by Josiah D. Whitney (1819-1896), the leader of the California State Geological Survey conducted in the 1860s and early 1870s. While “Whitney was a man of science and hardly a study-bound theologian arguing from Scripture to explain rock-hard facts,” (F. Turner 1985, 196) there was indeed a scriptural basis for Whitney's thesis which harkened back to earlier notions of holy miracle and catastrophe forming the basis of massive geological change. The strict scripturalism of earlier centuries had largely fallen out of favor after the groundbreaking

work of James Hutton (1726-1797) and Charles Lyell (1797-1875) had laid the foundations of “uniformitarianism,” the assertion that “the forces that had produced the earth in its present form were still in operation, still acting in the selfsame way they had from the beginning of geological time.” (F. Turner 1985, 197) Through his studies at Madison, as well as through the work of his close friend Ezra Carr, Muir was familiar not only with Hutton and Lyell, but also with the work of Louis Agassiz (1807-1873), who had greatly forwarded theories of glaciation through expeditions in northern Europe. Emboldened by this knowledge, but more so by a frank and direct love of scientific truth which remained undiminished throughout his life, Muir publicly confronted Whitney, who was famously acerbic in his dismissal of the young amateur. However, Muir’s argument won the day, and indeed his defense of the glacial formation of Yosemite is accurately seen as a turning point in the continued growth of geological science in the west. There are, of course, obvious and direct echoes of other threads of Muir’s life here: the rejection of a Biblically based authority, the iconoclastic belief in independence and observation, and the profound trust in nature providing an intelligible index and guide to the history to the world.

Muir’s life as a political activist is dominated by his work around the proposed development of the Hetch Hetchy valley. It is important to note that we move here to a very different point in Muir’s biography: he married Louisa Strentzel in 1880, a first daughter, Wanda, was born in the spring of the following year and their second child, Helen, arrived five years on, in 1886. We alluded earlier to a period in Muir’s life that was more domestic, more reconciled to the social, and more focused on concerns that engaged

wider communities in discourse and action and his turning to the political arena at this time must be seen in the context of these other shifts.

In the first decade of the new century, the picturesque Hetch Hetchy valley, created by glacial movements quite similar to those that formed Yosemite (although significantly smaller in scope and size) would be at the center of a national controversy that very neatly outlines the contours of environmental debate in America to this day. Muir wrote for the *Weekly Transcript* in Boston about his first visit to the valley, which occurred in the fall of 1872, and the article (published the following spring) is pleasant enough, notable for his encounters with a family of bears, a nighttime visit from “a brown nugget of a wren,” and by his declarations that Hetch Hetchy was essentially a second Yosemite, where visitors could “see rocks and waterfalls, meadows and groves, of Yosemite size and kind, and grouped in Yosemite style.” (Muir 1873) Indeed, the likeness was so striking that Muir believed that “only the more calm and careful observers would be able to fix upon special differences” (Muir 1873) between the two valleys. There is, however, nothing here that presages the later tempest regarding the valley. Nash sets the stage:

Situated on a dry, sandy peninsula, the city of San Francisco faced a chronic fresh-water shortage. In the Sierra, about one hundred and fifty miles distant, the erosive action of glaciers and the Tuolumne River scooped the spectacular, high-walled Hetch Hetchy Valley. As early as 1882, city engineers pointed out the possibility of damming its narrow, lower end to make a reservoir. They also recognized the opportunity of using the fall of the impounded water for the generation of hydroelectric power. (Nash 1967, 161)

At first the defense of the valley was successful and it was not until the spring of 1906, when “earthquake and fire devastated San Francisco and added urgency and public sympathy to the search for an adequate water supply” (Nash 1967, 161) that the issue reached national prominence. While “no system could have survived the earthquake to

deliver the water necessary to quench the hundreds of fires that raked the city on those April days,” it was “charged that ... [the] denial of the city’s petition for the Tuolumne River sites had contributed to the disaster, and in the climate of that time it is understandable that ... [the claim] was widely believed.” (F. Turner 1985, 338) The details of this controversy are a dense web of political intrigue, but the crux of the debate is vital for considerations of later movements in environmentalism. Nash may be overstating the situation when he claims that as the battle over Hetch Hetchy unfolded, “for the first time in the American experience the competing claims of wilderness and civilization to a specific area received a thorough hearing before a national audience;” (Nash 1967, 162) but if he does, it is not by much. He devotes an entire chapter in *Wilderness & The American Mind* to Hetch Hetchy, using it as a bridge between his discussions of Muir and what he terms “the wilderness cult” before it and the following section on Aldo Leopold (more on whom, below).

A political history of Hetch Hetchy would focus on a different set of actors: Presidents Theodore Roosevelt and Woodrow Wilson were key to the various related bills being passed; Robert Underwood Johnson, associate editor of *Century* and a long-term close friend of Muir’s, was probably the most active voice against the plan; and California Congressman William Kent—who also donated “several hundred acres of virgin redwood forest on the shoulder of Marin County’s Mt. Tamalpais” (Nash 1967, 172) to establish the Muir Woods in 1908—was probably the key voice in the eventual creation of the reservoir. While keeping in mind their considerable practical impact, the two ideological leaders of the debate were Muir and Roosevelt’s Chief Forester, Gifford Pinchot. The two men had

first met in 1895, at a dinner hosted by Pinchot's father in Boston, however their first extended time in each other's company occurred in the summer of 1896 as part of a Forestry Commission assigned by the Secretary of the Interior through the National Academy of Science to "tour the Western woodlands" with a task of "formulating explicit policy for the management of the reserves." (Nash 1967, 135) (Pinchot was officially a part of the Commission, serving as the secretary; Muir was along in an unofficial capacity as an advisor.)

Muir came to the Commission admittedly wearied from a year of travelling—he writes to Helen, now ten, from the office of a friend that he is "waiting the arrival of the forestry commission with whom I expect to start work tonight at half past ten o'clock. It is now about noon. I feel that this is the end of the strange lot of events I have been talking about for when I reach the Rocky Mountains Ill [sic] feel at home." (Muir 1896a) Pinchot was quite taken by Muir, writing quite positively about his impressions of the tall Scotsman. Muir's reaction is less clear: on the one hand, the only mention made of Pinchot in his letters from July and August of 1896 concerns the group's attempt to locate his whereabouts: "Pinchot is out here somewhere but we have not yet found him. Though we expect to meet him soon." (Muir 1896b) On the other, Muir did convince Pinchot to accompany him on a voyage to Alaska later that fall, an invitation that, on July 23, Pinchot regretfully declined having been informed by the Commission that he "should be of some service to the general cause by spending more time in the Bitter Root Mountains than was intended at first." Pinchot claimed deep regret, writing that Muir "will know, without any words from me, how sorry I am that matters have turned out this way. I had already written

home that I was going with you, and I know how sorry my people will be when I tell them, as I must tonight, that the plan is changed.” (Pinchot 1896) Whether Pinchot was merely being polite or not, Muir’s only other acknowledgment of him in these two months of surviving correspondence is a simple confirmation in a note on August 5 to Robert Underwood Johnson: “Pinchot is not going with me as was at first planned.” (Muir 1896c) The two would come to highly public loggerheads within a few years, but even at this first meeting the differences between them

surfaced that fall when the commission began the task of drawing up its report and recommendations. All the members could agree that some form of immediate federal regulation was needed to protect the nation’s timberlands, but what kind of regulation and enforced by whom? Pinchot alone among the commission members had any real idea of practical forestry and the governmental administration of forest reserves, having gained valuable experience in Europe, where forestry practices were now far in advance of America’s. While he was captivated by Muir’s personal magnetism and deferential to Sargent with his vast fund of dendrological knowledge, he was not going to be persuaded by them simply to lock up broad swaths of highly valuable timberlands under the vigilant supervision of the U.S. Army. Instead Pinchot envisioned a civilian force of trained foresters administering forest reserves to which commercial interests had supervised access. (F. Turner 1985, 302)

Hetch Hetchy serves to bring into clearer view the emergent spectrum of positions vis-à-vis the relationship between humanity and the environment. At one extreme, we have advocates of the true wild, people whose vision includes an elimination of all human traces from wilderness areas. While Muir was sympathetic to this group, and indeed his writings can easily be used to demonstrate support for it, in truth he was much more pragmatic in his outlook, recognizing that such a movement was doomed to failure. Note that, in this judgment, he may have erred: Earth First! would certainly see themselves as being at this end of the spectrum, and, whatever the evaluation of their policies, they have certainly been a long-standing voice in environmental activism.

At the other extreme, we find absolute support for the exploitation of the natural world. This position has—and continues to have—its advocates, but is generally seen, especially from the 1960s on, as a more fringe position, inhabited for the most part by committed industrialists, speculative capitalists of certain stripes, and small pockets of radical Christianity who interpret man's dominion over the natural world to be absolute and who often make a linkage between the biblically ordained fleeting nature of the physical world and climate change: that is, God has already told us that the world will not last forever, so all of the nonsense about hastening its demise is actually in accordance with His plan.

Recognizing that neither Muir nor Pinchot truly occupy either of these extremes, Nash summarizes the difference in the two men's positions thus: "For all his love of the woods, Pinchot's ultimate loyalty was to civilization and forestry; Muir's to wilderness and preservation." (Nash 1967, 135) Contrary to a plethora of political caricatures from both sides, neither man favored the unfettered exploitation of natural resources and even Muir recognized that the inexorable expansion of the American population—both in numbers and geographically—made any move to isolate and retain the true wild untenable. They were left, therefore, on opposite sides of questions of maintenance: of what to do with nature, defined as those areas that were neither urban nor agriculturally rural. Pinchot's position became broadly known as "fair use," a stance that advocated the preservation of nature as a planned, cultivated, and harvested resource. For example, in his primary domain—that of forestry—he saw the need for a renewable supply of timber, and looked to implement policies that allowed an annual harvest that would be counterbalanced through

planting efforts. Aldo Leopold, who we will meet in greater detail shortly and who was also a long-term employee of the American government's forestry department, sketched these two positions thus:

Conservationists are notorious for their dissensions. Superficially these seem to add up to mere confusion, but a more careful scrutiny reveals a single plane of cleavage common to many specialized fields. In each field one group (A) regards the land as soil, and its function as commodity-production; another group (B) regards the land as biota, and its function as something broader. How much broader is admittedly in a state of doubt and confusion. (Leopold 1949, 221)

Specifically regarding Hetch Hetchy, Pinchot's position is summarized in his testimony before the House Committee on the Public Lands, which Nash quotes: "the fundamental principle of the whole conservation policy is that of use, to take every part of the land and its resources and put it to the use in which it will serve the most people." (Nash 1967, 171) This was an eminently practical position, one based on his experiences in Europe as a student and young professional, and one that safely aligned Pinchot with great machines of economic and political power.

In what Nash sees as a potentially fatal strategic mistake, the preservationists opposed this view with an essentially aesthetic argument. This is, I would claim, a misreading of the position: recognizing that for some of these activists, there is a religious argument along with the aesthetic, Nash seems to miss the clear connection between the two. While characteristically overtly Freudian to a fault, Turner paints a different picture, where the extended difficulties of the Hetch Hetchy debate wear Muir down to the point that he returns again to his hardscrabble Protestant roots:

During the prolonged anguish of Hetch Hetchy, Muir lost some of the hard-won philosophical balance of his mature years and spoke like a desert father. ... There recurred too an Augustinian sense of humans' departure from the divine plan, as if

at the end of his life the revenant form of old Daniel Muir had arisen to hound his freed son, warping his perception into the paternal pattern. Right was blazingly clear; wrong was absolute. The motives of the proponents of the dam scheme were stained and even Satanic. “But what can you expect?” he asked rhetorically of the despoilers. “The Lord Himself couldn’t keep the devel [sic] out of the first reservation that was ever made.” (F. Turner 1985, 341)

Hetch Hetchy was part of “God’s freely bestowed natural beauties,” (F. Turner 1985, 341) and it mattered not as a distant, inanimate tableau, but rather because of what it could inspire in humanity, in how these protected spaces could create a context for a conduit to some sacred sense of place and power. Even the secular defense of preservation makes common reference to higher and loftier goals, often in direct juxtaposition with what is seen as the crass commercial interests of the fair use advocates. Either way, however, the argument still relies on natural space’s ability to function as a mirror for humanity, one that serves as a restorative counterweight to the burdens of urban life or to the hard realities of rural agriculture. Neither position, the aesthetic or the religious, specifies a value in the wild *for itself*. This opens the door for a significant counter-argument: if in the process of flooding Hetch Hetchy, it is possible to also address these needs, through the creation of parks on the shores of the flooded lakes or through the continued protection of the surrounding areas, advocates of the dam exclaimed, *why should we not have both?* San Francisco can have water and electricity *and* we can create ways to meet these other needs as well. Nash claims that if “more attention had been paid specifically to the wilderness qualities of Hetch Hetchy—which *any* man-made construction would have eliminated—San Francisco’s point about the scenic attraction of an artificial lake could have been more easily answered. As it was, this tactical error cost the preservationists considerable support.” (Nash 1967, 170)

Still, for Nash, the debate over Hetch Hetchy retains its importance without regard to the ultimate outcome. For him, the furor over Hetch Hetchy reflects a profound yet subtle shift in the American stance towards nature, where “previously most Americans had not felt compelled to rationalize the conquest of wild country in this manner. For three centuries they had chosen civilization without any hesitation. By 1913 they were no longer so sure.” (Nash 1967, 181) Doubt and uncertainty had crept in to the process: having reached the Pacific, having largely relocated all native resistance to expansion, it was time for America to take stock of its land and to open the debate of what to do with the vast swathes that remained mostly unpopulated.

We will encounter Norwegian philosopher Arne Næss (1912-2009) in more depth momentarily; for now he serves as a useful reminder that, even if Nash is correct about Hetch Hetchy marking a beginning, the two opposing views of Muir and Pinchot that it spawned are still quite alive. In 1973, speaking of the growing awareness of the ecological crisis, Næss writes that “a shallow, but presently rather powerful movement, and a deep, but less influential movement, compete for our attention.” (Næss 1995a, 3) The former is easy enough to define as it urges us to “fight against pollution and resource depletion” with a central objective of “the health and affluence of people in the developed countries.” (Næss 1995a, 3) The latter is harder to identify, and Næss proposes seven headings under which he adds description. Just the titles will suffice for our purposes at this point: *the relational, total-field image, biospherical egalitarianism, principles of diversity and of symbiosis, anti-class posture, a need to fight against pollution and resource depletion, complexity not complication, and local autonomy and decentralization.* We’ll examine

some of these later, for now I just want to call attention to the disparity: the rationale for Pinchot's fair use land management is simple, focusing on the precedence of human needs above all else. San Francisco deserves clean water and reliable power, and if that requires the creation of a lake where once there was a valley, so be it. The rationale against this position is far more complex, requiring considerations that range from the aesthetic to the spiritual to a deep examination of the relationship between globalization and the preservation of natural habitats. Predictably—at least in hindsight—when the desires of early and late capitalism are pitted against a complicated, philosophical examination of priorities and interrelated engagements, capitalism wins. Easily.

In Nature, Of the World, With God

Instead of being a machine, nature at large turns out to be more like human nature—unpredictable, sensitive to the surrounding world, influenced by small fluctuations.

Fritjof Capra, *The Web of Life*

This perspective is fundamentally incompatible with a view of nature such as that presented by Annie Dillard. Dillard's nature is not sweet and harmonious, but decidedly "red in tooth and claw". An experience of the sacred—a mixture of fear and fascination in the face of an inscrutable mystery—is fundamental to Dillard's world view but conspicuously absent in New Age religion.

Wouter Hanegraaff, *Reflections on New Age and the Secularization of Nature*

The question remains of why I should choose to listen to John Muir at all: what is it

that he offers us as we try to think through the issue of our relationship with our ecology? Clearly, there is aesthetic enjoyment: the soaring, prosaic nature of Muir's writing, the seeming eternal optimism he displays with regards to the depths of nature can all speak to contemporary people. This is important: as Næss writes, "in environmental affairs, perhaps we should try primarily to influence people toward beautiful acts." (Næss 2008, 93) But the real attraction is Muir's demand for direct engagement with nature, the continued insistence that people benefit not just from knowing nature exists, not just from seeing it, but rather from being *in* it, from paying close attention to it. There is a lack of theoretical distance in Muir's writings that remains refreshing, a sense that some behavior need not be deeply considered, but is rather worthwhile merely as it is.

That is not to say Muir's positions are unproblematic. Chief among the concerns is his sense that nature exists as an unmitigated "good," incapable of error and of harm. This links back to his largely solitary existence: Muir's experience of nature was consistent with this conviction, and he never attributed any harm—and very little risk—to his various perilous endeavors. Consider a representative moment: Muir has just described a major earthquake in Yosemite, an event that caused much consternation among most of the people, yet prompted him to run "out of my cabin, near the Sentinel Rock, both glad and frightened, shouting, 'A noble earthquake!' feeling sure I was going to learn something." (Muir 1901, 99) He dryly notes the differences in reaction between himself, the Indians present and "the few whites wintering in the valley," by claiming that, "It is always interesting to see people in dead earnest, from whatever cause, and earthquakes make everybody earnest." (Muir 1901, 100) This piece closes with quintessential Muir, where

the seeming chaos and danger of nature is presented as an epiphany that is only accessible through direct experience:

If for a moment you are inclined to regard these taluses as mere dragged, chaotic dumps, climb to the top of one of them, tie your mountain shoes firmly over the instep, and with braced nerves run down without any haggling, puttering hesitation, boldly jumping from boulder to boulder with even speed. You will then find your feet playing a tune, and quickly discover the music and poetry of rock piles,—a fine lesson; and all nature's wildness tells the same story. Storms of every sort, torrents, earthquakes, cataclysms, "convulsions of nature," etc., however mysterious and lawless at first sight they may seem, are only harmonious notes in the song of creation, varied expressions of God's love. (Muir 1901, 100)

One of Muir's most well-known works traces a very similar arc. Teale sets the scene like this:

During the time he was making his solitary expeditions into the California mountains, subsisting largely on tea and bread, Muir calculated his living expenses at three dollars a month. The last week of December 1874 found him exploring the high divided between the Yuba and Feather rivers in northern California. When a winter gale struck the forest along one of the tributaries of the Yuba, Muir climbed to the top of a Douglas spruce—now called a Douglas fir—better to enjoy the wild adventure of the storm. Four years later, *Scribner's Monthly* published an account of his experience as "A Wind Storm in the Forests of the Yuba" in its issue of November 1878. This later became a chapter in Muir's first book, *The Mountains of California*. Nothing else he ever wrote, with the exception of his dog story, *Stickeen*, brought Muir so many letters from readers. (Teale 2001, 181)

Muir writes that, "when the storm began to sound, I lost no time in pushing out into the woods to enjoy it. For on such occasions Nature has always something rare to show us, and the danger to life and limb is hardly greater than one would experience crouching deprecatingly beneath a roof." (Muir 1894, 121) Again, what most would interpret as danger is seen not just as knowledge, but rather as knowledge to rush towards headlong, with no consideration of harm.

Toward midday, after a long, tingling scramble through copses of hazel and ceanothus, I gained the summit of the highest ridge in the neighborhood; and then it occurred to me that it would be a fine thing to climb one of the trees to obtain a

wider outlook and get my ear close to the Æolian music of its topmost needles. But under the circumstances the choice of a tree was a serious matter. One whose instep was not very strong seemed in danger of being blown down, or of being struck by others in case they should fall; another was branchless to a considerable height above the ground, and at the same time too large to be grasped with arms and legs in climbing; while others were not favorably situated for clear views. After cautiously casting about, I made choice of the tallest of a group of Douglas Spruces that were growing close together like a tuft of grass, no one of which seemed likely to fall unless all the rest fell with it. Though comparatively young, they were about 100 feet high, and their lithe, brushy tops were rocking and swirling in wild ecstasy. Being accustomed to climb trees in making botanical studies, I experienced no difficulty in reaching the top of this one, and never before did I enjoy so noble an exhilaration of motion. The slender tops fairly flapped and swished in the passionate torrent, bending and swirling backward and forward, round and round, tracing indescribable combinations of vertical and horizontal curves, while I clung with muscles firm braced, like a bobolink on a reed.

In its widest sweeps my tree-top described an arc of from twenty to thirty degrees, but I felt sure of its elastic temper, having seen others of the same species still more severely tried—bent almost to the ground indeed, in heavy snows—without breaking a fiber. I was therefore safe, and free to take the wind into my pulses and enjoy the excited forest from my superb outlook. (Muir 1894, 122–3)

Even his more calamitous moments are brushed aside in similar fashion: escaping a week stranded in a severe snowstorm on Mount Shasta, summarized in Muir's description of himself and his company as being "Frozen, blistered, famished, benumbed, our bodies seemed lost to us at times — all dead but the eyes," (Muir 1918, 14) he goes on to describe their descent below the line of the storm as a reincarnation of sorts:

We had been so long without food that we cared but little about eating, but we eagerly drank the coffee he prepared for us. Our feet were frozen, and thawing them was painful, and had to be done very slowly by keeping them buried in soft snow for several hours, which avoided permanent damage. Five thousand feet below the summit we found only three inches of new snow, and at the base of the mountain only a slight shower of rain had fallen, showing how local our storm had been, notwithstanding its terrific fury. ... In two hours' ride the last snowbank was left behind. Violets appeared along the edges of the trail, and the chaparral was coming into bloom, with young lilies and larkspurs about the open places in rich profusion. How beautiful seemed the golden sunbeams streaming through the woods between the warm brown boles of the cedars and pines! All my friends among the birds and plants seemed like OLD friends, and we felt like speaking to every one of them as we passed, as if we had been a long time away in some far, strange country.

In the afternoon we reached Strawberry Valley and fell asleep. Next morning we seemed to have risen from the dead. My bedroom was flooded with sunshine, and from the window I saw the great white Shasta cone clad in forests and clouds and bearing them loftily in the sky. Everything seemed full and radiant with the freshness and beauty and enthusiasm of youth. Sisson's children came in with flowers and covered my bed, and the storm on the mountaintop banished like a dream. (Muir 1918, 15)

When there is blame for these happenings to be placed, it is located squarely on the human and, even more clearly, the time spent away from those lessons taught by nature. Consider this recollection of a walk in 1872:

After I had passed the tall groves that stretch a mile above Mirror Lake, and scrambled around the Tenaya Fall, which is just at the head of the lake groves, I crept through the dense and spiny chaparral that plashes the roots of the mountains here for miles in warm green, and was ascending a precipitous rock front, smoothed by glacial action, when I suddenly fell — for the first time since I touched foot to Sierra rocks. After several somersaults, I became insensible from the shock, and when consciousness returned I found myself wedged among short, stiff bushes, trembling as if cold, not injured in the slightest.

Judging by the sun, I could not have been insensible very long; probably not a minute, possibly an hour; and I could not remember what made me fall, or where I had fallen from; but I saw that if I had rolled a little further, my mountain climbing would have been finished, for just beyond the bushes the cañon wall steepened and I might have fallen to the bottom. "There," said I, addressing my feet, to whose separate skill I had learned to trust night and day on any mountain, "that is what you get by intercourse with stupid town stairs, and dead pavements." I felt degraded and worthless. I had not yet reached the most difficult portion of the canyon, but I determined to guide my humbled body over the most nerve-trying places I could find; for I was now awake, and felt confident that the last of the town fog had been shaken from both head and feet.

I camped at the mouth of a narrow gorge which is cut into the bottom of the main canyon, determined to take earnest exercise next day. No plushy boughs did my ill-behaved bones enjoy that night, nor did my bumped head get a spicy cedar plume pillow mixed with flowers. I slept on a naked boulder, and when I awoke all my nervous trembling was gone. (Muir 1918, 5)

This scene is somewhat buried in a longer piece on geology, but it has caught the eye of later readers, prompting its inclusion in Teale's collection as well. The themes here are clear: the harshness of both the self-critique and the cure; the insistence that we are

smarter, both mentally and physically, outside of the urban; and the conviction that Muir's true self lived out here, on the mountains and in the wind. The difficulty here, of course, is that these moments that Muir so eloquently describes in language of beauty and purpose are also moments of intense devastation, depending on the vicissitudes of geography. When we grapple with the meaning of nature, we must simultaneously hold the immense power of destruction it holds along with the revelatory and soul-shattering beauty.

The Other Side of the Tracks: Shadows and Violence on the Road to America (II)

I see it as central to the ecological issue that when blacks were forced to work the land, the process of human domination and the exploitation of nature occurred at exactly the same time.

Carl Anthony, *Ecopsychology and the Deconstruction of Whiteness*

Before moving on from our direct engagement with Muir and his writings, there is one additional issue I want to explore. In doing so, I am already gazing towards the future, as I want to examine the racism expressed in some of Muir's writings not with a close critique of him or his cultural setting in mind, but rather to lay the groundwork for later discussions of contemporary (or nearly contemporary) ecological movements. As such I am not highlighting these passages to judge Muir *per se*, but rather to suggest that the ways in which this material is treated is both problematic and, more importantly, representative of some significant issues with the majority of ecological thinking and theorizing. In

drawing this out, we will quickly join three elements: Muir's own writings, the contemporary environmentally inspired ritual known as "The Council of All Beings," and a conversation between two contemporary thinkers, Theodore Roszak and Carl Anthony. This methodology is intentional: this is not the place for a long disquisition into the cultural history of race in America and, I hope, the argument is clear enough that, by the last of the three stops, the sketch is complete enough to proceed.

Muir's world, like our own, was shaped by racism, and it comes as no surprise that an individual with his background would inherit some of the dominant cultural assumptions of the day. Such things are complicated, and it is important to remember that Muir was an avowed opponent of slavery and that his journals reveal someone committed to reciprocal personal engagement with a wide variety of individuals. These "truths" need to be held together with his clear inheritance of a variety of racially motivated assumptions, both in terms of his expectations of the African Americans he encounters and in larger cultural terms—one of the reasons I quote these excerpts at some length is to show the metaphorical impact, the use of imagery of light and dark, the other associative content that being in the presence of African Americans raises for Muir in his long walk through America. Consider this excerpt from his *A Thousand-Mile Walk to the Gulf*:

Met a young African with whom I had a long talk. Was amused with his eloquent narrative of coon hunting, alligators, and many superstitions. He showed me a place where a railroad train had run off the track, and assured me that the ghosts of the killed may be seen every dark night.

Had a long walk after sundown. At last was received at the house of Dr. Perkins. Saw Cape Jasmine [*Gardenia florida*] in the garden. Heard long recitals of war happenings, discussion of the slave question, and Northern politics; a thoroughly characteristic Southern family, refined in manners and kind, but immovably prejudiced on everything connected with slavery. (Muir and Badè 1916, 13)

Worster's treatment of Muir and race is illuminating as an example of the kind of omission that draws Anthony's attention. (In some ways, Turner's near-complete avoidance of the issue is equally important, but for our purposes, Worster's pattern of recognition and avoidance is a richer source of material.) As a summary of Muir's encounters on his long walk through the antebellum south, Worster claims that

It was not Muir's intention to discover what the Civil War had meant to the losers or winners. He remained opposed to war of any kind or for any purpose. He had been against slavery too, but pacifism more than abolitionism had dominated his thoughts in the run-up to the war. Now, inevitably along his trail he would encounter both black and white southerners, would eat at their tables, sleep in their beds, listen to the dominant race's views about the future of the South, as they writhed under a federal policy of military occupation and reconstruction, and encounter for first time in his life a minority people who had long been oppressed by Euro-American civilization. He would find white southerners bitter, obsessive, and reactionary about such matters. Blacks he would get to know less well, as they guarded their speech carefully and he recorded little of whatever conversations he had with them, *but on the whole his experience with them left him a positive impression.* [emphasis added] (Worster 2008, 121–122)

Later, Worster writes that, “whatever Muir may have missed about the deeper turmoil of southern black's lives, he met them more or less as equals and shared the intimacy of their homes to an extent that few white northerners, or white southerners, ever did.” (Worster 2008, 127) And yet, Muir writes the following of two encounters on that journey :

Cotton is the principal crop hereabouts, and picking is now going on merrily. Only the lower bolls are now ripe. Those higher on the plants are green and unopened. Higher still, there are buds and flowers, some of which, if the plants be thrifty and the season favorable, will continue to produce ripe bolls until January. The negroes are easy-going and merry, making a great deal of noise and doing little work. One energetic white man, working with a will, would easily pick as much cotton as half a dozen Sambos and Sallies. The forest here is almost entirely made up of dim-green, knotty, sparsely planted pines. The soil is mostly white, fine-grained sand.

September 26. Reached Athens in the afternoon, a remarkably beautiful and aristocratic town, containing many classic and magnificent mansions of wealthy planters, who formerly owned large negro-stocked plantations in the best cotton and sugar regions farther south. Unmistakable marks of culture and refinement, as well as wealth, were everywhere apparent. This is the most beautiful town I have

seen on the journey, so far, and the only one in the South that I would like to revisit. The negroes here have been well trained and are extremely polite. When they come in sight of a white man on the road, off go their hats, even at a distance of forty or fifty yards, and they walk bare-headed until he is out of sight.

September 27. Long zigzag walk amid the old plantations, a few of which are still cultivated in the old way by the same negroes that worked them before the war, and who still occupy their former "quarters." They are now paid seven to ten dollars a month. (Muir and Badè 1916, 12)

and

In the center of this globe of light sat two negroes. I could see their ivory gleaming from the great lips, and their smooth cheeks flashing off light as if made of glass. Seen anywhere but in the South, the glossy pair would have been taken for twin devils, but here it was only a negro and his wife at their supper.

I ventured forward to the radiant presence of the black pair, and, after being stared at with that desperate fixedness which is said to subdue the lion, I was handed water in a gourd from somewhere out of the darkness. I was standing for a moment beside the big fire, looking at the unsurpassable simplicity of the establishment, and asking questions about the road to Gainesville, when my attention was called to a black lump of something lying in the ashes of the fire. It seemed to be made of rubber; but ere I had time for much speculation, the woman bent woefully over the black object and said with motherly kindness, "Come, honey, eat yo' hominy."

At the sound of "hominny" the rubber gave strong manifestations of vitality and proved to be a burly little negro boy, rising from the earth naked as to the earth he came. Had he emerged from the black muck of a marsh, we might easily have believed that the Lord had manufactured him like Adam direct from the earth.

Surely, thought I, as I started for Gainesville, surely I am now coming to the tropics, where the inhabitants wear nothing but their own skins. This fashion is sufficiently simple, "no troublesome disguises," as Milton calls clothing, — but it certainly is not quite in harmony with Nature. Birds make nests and nearly all beasts make some kind of bed for their young; but these negroes allow their younglings to lie nestless and naked in the dirt. (Muir and Badè 1916, 19–20)

"A positive impression," indeed! Interestingly, Worster deals explicitly with these two moments, yet never seems to recognize the depths of racism that Muir demonstrates, not only the obvious language that leaps from the page, but also the associations between light and darkness, activity and passivity, etc.

Again, the point here is not to castigate Muir for views that were all too common

and banal in his time, but rather to use these moments to reinforce two propositions. The first is that we all tell many stories, and that human lives are variegated, complex things containing behaviors and thoughts that are often inconsistent and less than savory. The second is that this part of Muir's worldview—his whiteness, if you will—is inherited along with the rest, that later environmental thinkers have also been similarly shaped by their (nearly universal) whiteness, and that these issues are often ignored a la Turner, or explained away a la Worster.

Inheriting Foothills: What Leads Aldo Leopold to Think Like A Mountain?

The world is not what I think, but what I live through.

Maurice Merleau-Ponty, *Phenomenology of Perception*

A more concrete example may be in order, and will allow us to engage with the other two touchstones for this section. I want to start with a phrase, usually attributed to Aldo Leopold's *A Sand County Almanac*, where he supposedly asks his readers to “think like a mountain,” a slogan that has been widely adapted within various ecological movements. The difficulty is that the attribution is largely apocryphal: not only does the exhortation not occur in the text; the section it refers to is not at all clear in its interpretation. This is actually a recurring issue with Leopold, as the plentiful references to *A Sand County Almanac* seem to focus almost exclusively on the final page or two of the

two hundred and twenty page text. This will not be the last time our attention is focused on the gap between the actual language and structure of a text and its reception in environmental and/or religious circles, an issue which plagues Gaia theory of the next chapter as well.

The phrase in question is taken from the section “Arizona and New Mexico,” a chapter that focuses not on Leopold’s home base of Wisconsin, but on the desert southwest where he spent roughly fifteen years of his early professional life, interrupted by a struggle with Bright’s Disease (a historical term used to cover a wide range of kidney disorders) that lasted over a year. The chapter opens with a nostalgic piece, “On Top,” which speaks of the wide plateau that crowns White Mountain, accessible when Leopold first arrived in Arizona solely by horseback and hence “the exclusive domain of the mounted man: mounted cowman, mounted sheepman, mounted forest officer, mounted trapper, and those unclassified mounted men of unknown origin and uncertain destination always found on frontiers.” (Leopold 1949, 123) Leopold goes on to mourn the passing of such a pure frontier, ending the section by claiming that “despite several opportunities to do so, I have never returned to the White Mountain. I prefer not to see what tourist roads, sawmills, and logging railroads have done for it, or to it. I hear young people, not yet born when I first rode out ‘on top’ exclaim about it as a wonderful place. To this, with an unspoken mental reservation, I agree.” (Leopold 1949, 128)

What Leopold seems to be really mourning, however, is a certain notion of masculinity. He has already explicitly made the frontier the domain of various kinds of men, certain and otherwise. He goes on to describe an annual contest, where “in the little

village at the foot of the mountain there existed, each spring, a tacit competition to be the first rider to invade the high solitudes. Many of us tried it, for reasons we did not stop to analyze. Rumor ran fast. Whoever did it first wore a kind of horseman's halo. He was 'man of the year.'" Leopold's masculinity is concerned with frontiers, borders, extremes: being 'on top' allows even "the dullest rider, as well as his horse, ... [to feel] these moods to the marrow of his bones." (Leopold 1949, 125) Indeed, the intensity of an emotion, experienced in solitude, becomes a mark of honor as he describes thunder and lightning on that high plateau, concluding that "it must be [a] poor life that achieves freedom from fear." (Leopold 1949, 126)

Masculinity is literally inscribed onto the top of the mountain, where exists a "profusion of initials, dates, and cattle brands inscribed on the patient bark of aspens at every mountain camp site," a long "history of *Homo texanus* and his culture." (Leopold 1949, 126) This history follows a trans-generational narrative that is set in opposition to "the cold categories of anthropology," preferring instead the

terms of the individual career of some founding father whose initials you recognized as the man whose son bested you at horse-trading, or whose daughter you once danced with. Here, dated in the 'nineties, was his simple initial, without brand, inscribed no doubt when he first arrived alone on the mountain as an itinerant cowpuncher. Next, a decade later, his initial plus brand; by that time he had become a solid citizen with an 'outfit,' acquired by thrift, natural increase, and perhaps a nimble rope. Next, only a few years old, you found his daughter's initial, inscribed by some enamored youth aspiring not only to the lady's hand, but to the economic succession.

The old man was dead now; in his later years his heart had thrilled only to his bank account and to the tally of his flocks and herds, but the aspen revealed that in his youth he too had felt the glory of the mountain spring. (Leopold 1949, 126-7)

There is a lot packed into these few pages: the marginality and economic use of women, the clear delineation of not just a masculinity, but a young masculinity, the inevitability of

increased social engagement as maturity is reached. But, most of all, here and throughout *A Sand County Almanac*, there is loss. The way of life that Leopold idolizes and idealizes is gone, relegated to an existence as something of a prior generation, and this situation causes him profound disease.

Leopold squarely places the blame for the decline of the American man—which he sees explicitly as an outdoorsman, a sportsman, a hunter—at the feet of technology. (The Freudian implications of the following passage are almost too blatant to warrant attention, but the notion of technology as a phallic substitute, as a dildo of the outdoors, cannot be completely ignored.) It may be argued that Leopold does not object to technology, but rather to the individuals who become slaves to it, to

the gadgeteer, otherwise known as the sporting-goods dealer. He has draped the American outdoorsman with an infinity of contraptions, all offered as aids to self-reliance, hardihood, woodcraft, or marksmanship, but too often functioning as substitutes for them. Gadgets fill the pockets, they dangle from the neck and belt. The overflow fills the auto-trunk, and also the trailer. Each item of outdoor equipment grows lighter and often better, but the aggregate poundage becomes tonnage. The traffic in gadgets adds up to astronomical sums, which are soberly published as representing ‘the economic value of wildlife.’ But what of cultural values? (Leopold 1949, 180)

The four virtues listed—self-reliance, hardihood, woodcraft, marksmanship—are all exalted elsewhere in the text. There is no room in *A Sand County Almanac* for the urbanite, the community organizer, the factory worker, the pacifist or, and perhaps especially, women. To be fair, they do make an occasional appearance: in a conversation about the importance of amateur research in the burgeoning “sport” of wildlife research, he praises Margaret Morse Nice, “an amateur ornithologist ... [who] has become a world-authority on bird behavior, and has out-thought and outworked many a professional student of social

organization in birds.” (Leopold 1949, 185) Sport, however, has already been deemed a masculine affair, centering around the negotiation of a code of conduct as it relates to hunting; so at best, Ms. Nice is a trespasser of sorts. Examples of the ethical nostalgia centered around the relationship between men, their tools, and their violent relations with the animal kingdom abound, but perhaps a good example is found in Leopold’s own early development, where, after declaring his “unspeakable delight” on shooting his first duck (which, giving a title to this section, “hit the snowy ice with a thud and lay there, belly up, red legs kicking”), Leopold moves on to the complications of hunting partridges. Again, the elements are starkly drawn: the paternal injunction, the struggle against temptation, the grace and visual power of Leopold’s writing, and the clear longing:

When my father gave me the shotgun, he said I might hunt partridges with it, but that I might not shoot them from trees. I was old enough, he said, to learn wing-shooting. . . .

Compared with a treed partridge, the devil and his seven kingdoms was a mild temptation.

At the end of my second season of featherless partridge-hunting I was walking, one day, through an aspen thicket when a big partridge rose with a roar at my left, and towering over the aspens, crossed behind me, hell-bent for the nearest cedar swamp. It was a swinging shot of the sort the partridge-hunter dreams about, and the bird tumbled dead in a shower of feathers and golden leaves.

I could draw a map today of each clump of red bunchberry and each blue aster that adorned the mossy spot where he lay, my first partridge on the wing. I suspect my present affection for bunchberries and asters date from that moment. (Leopold 1949, 121–2)

The edition of *A Sand County Almanac* in front of me contains line drawings by Charles W. Schwartz. Almost all of the drawings are of animals, with a clear connection to the surrounding text. The previous page shows a duck in flight, with a windmill in the distance (Leopold shoots his first duck by identifying a warm spot in the otherwise frozen pond

near a windmill runoff line). This page shows what I assume to be the same duck—the bill is clearly not that of a partridge—on its back, legs and wings akimbo. There is no blood, no wound, nothing aside from the pose to suggest the bird is dead or dying. Leopold's nostalgia is a sanitized one.

Leopold is no fool, and he is, at some level, aware of the complications of his position—he rants against technology and the ever-expanding sphere of human intrusion into the wilderness, yet he is aware that the behaviors he holds dear, the clearing of the land, hunting, solitary activity in the outdoors are all manifestations of the same cultural activities, in a different modulation:

The answer is not a simple one. Roosevelt did not disdain the modern rifle; White used freely the aluminum pot, the silk tent, dehydrated foods. Somehow they used mechanical aids, in moderation, without being used by them.

I do not pretend to know what is moderation, or where the line is between legitimate and illegitimate gadgets. It seems clear, though, that the origin of gadgets has much to do with their cultural effects. Homemade aids to sport or outdoor life often enhance, rather than destroy, the man-earth drama; he who kills a trout with his own fly has scored two coups, not one. I use many factory-made gadgets myself. Yet there must be some limit beyond which money-bought aids to sport destroy the cultural value of sport. (Leopold 1949, 181)

Leopold casts about for a sport that has proven resistant to the encroachment of technology (fishing is seen as “less severely mechanized than hunting,” a claim that reflects Leopold's greater engagement with what he terms “gunpowder sports” than with watery pursuits), and fails to discover much in the way of solace: hunting foxes “with hounds, backwoods style,” remains “one of the purest of sports; it has real split-rail favor; it has man-earth drama of the first water.” (Leopold 1949, 182) In a final move that can only be described as curmudgeonly, Leopold castigates the indiscriminate sharing of knowledge as a final negative byproduct of our increased reliance on technology. Here, information mirrors the

use of gadgets: there is the same lack of clarity as to exactly where the train ran off the tracks, the same sense of an inner circle where such behavior is accepted and an outer ring of hoi-polloi that are infringing upon the domain of the true sportsman.

Knowledge of the whereabouts of good hunting or fishing is a very personal form of property. It is like rod, dog, or gun: a thing to be loaned or given as a personal courtesy. But to hawk it in the marketplace of the sports column as an aid to circulation seems to me another matter. To hand it all and sundry as free public 'service' seems to me distinctly another matter. Even 'conservation' departments now tell Tom, Dick, and Harry where the fish are biting, and where a flock of ducks has ventured to alight for a meal.

All of these organized promiscuities tend to depersonalize one of the essentially personal elements in outdoor sports. I do not know where the line lies between legitimate and illegitimate practice; I am convinced, though, that 'where-to-go' service has broken all bounds of reason. (Leopold 1949, 182–3)

Before we write Leopold off entirely, however, he veers in an unexpected direction.

Facing what seems to be an intractable situation, where he believes deeply in the positive impact of prolonged engagement with nature but is openly hostile to the increased commodification of that experience in its entirety, from the accoutrements required for its success to the distribution of knowledge that surrounds it, Leopold insists upon the virtues of

a totally new form of sport, which does not destroy wildlife, which uses gadgets without being used by them, which outflanks the problem of posted land, and which greatly increases the human carrying capacity of a unit area. This sport knows no bag limit, no closed season. It needs teachers, but not wardens. It calls for a new woodcraft of the highest cultural value. The sport I refer to is wildlife research. (Leopold 1949, 184)

Interestingly, part of the benefit of wildlife research is its ability to break "the professional monopoly on research" held by what "started as a professional priesthood." Leopold does recognize the value of experts: "the more difficult and laborious research problems must doubtless remain in professional hands, but there are plenty of problems suitable for all

grades of amateurs.” (Leopold 1949, 185) So, wildlife research offers a stark contrast to the immediately preceding discussion of hunting, where knowledge is preferred to remain in the domain of the experts, parceled out grudgingly and only after the recipient is deemed worthy of such a gift. Instead, we have Leopold exhorting that “the promotion of wildlife research sports is the most important job confronting the profession of wildlife management.” (Leopold 1949, 186) This difference is explained by intent: wildlife research contains knowledge that may be crucial for our self-understanding:

This state of doubt about the fundamentals of human population behavior lends exceptional interest, and exceptional value, to the only available analogue: the higher animals. Errington, among others, has pointed out the cultural value of these animal analogues. For centuries this rich library of knowledge has been inaccessible to us because we did not know where or how to look for it. Ecology is now teaching us to search in animal populations for analogies to our own problems. By learning how some small part of the biota ticks, we can guess how the whole mechanism ticks. The ability to perceive these deeper meanings, and to appraise them critically, is the woodcraft of the future.

To sum up, wildlife once fed us and shaped our culture. It still yields us pleasure for leisure hours, but we try to reap that pleasure by modern machinery and thus destroy part of its value. Reaping it by modern mentality would yield not only pleasure, but wisdom as well. (Leopold 1949, 187)

Leopold closes this chapter, then, with an argument that recurs quite often in the ecological literature: nature is a sort of mirror, a puzzling reflection of ourselves where heretofore unimaginable riches of knowledge and perception lie if we could only apply ourselves to learn the tricks of its distorting surface. Additionally, there is a macro/micro argument as well: any insight into the biota, no matter how small, has the potential to throw light on the larger ecology.

Do not, however, be confused by the apparent movement towards a democratic impulse, where expertise may be spread around indiscriminately. Leopold remains an

elitist, and his encouragement of amateur wildlife research is aimed at raising more people to the level of scholar in their areas of focus. This is reinforced by the end of this section, the final paragraph before the oft-quoted “Land Ethic” closes out the text.

Ability to see the cultural value of wilderness boils down, in the last analysis, to a question of intellectual humility. The shallow-minded modern who has lost his rootage in the land assumes that he has already discovered what is important; it is such who prate of empires, political or economic, that will last a thousand years. It is only the scholar who appreciates that all history consists of successive excursions from a single starting-point, to which man returns again and again to organize yet another search for a durable scale of values. It is only the scholar who understands why the raw wilderness gives definition and meaning to the human enterprise. (Leopold 1949, 200–1)

“The Land Ethic” begins with a switch in register for Leopold: he invokes “god-like Odysseus”’ return from the war in Troy and moves quickly into a discussion of ethics, specifically a claim that “there is as yet no ethic dealing with man’s relation to land, and to the animals and plants which grow upon it. Land, like Odysseus’ slave-girls, is still property. The land-relation is still strictly economic, entailing privileges but not obligations.” Leopold is at least passably conversant with scripture, citing both “the Mosaic Decalogue” and making the claim that “individual thinkers since the days of Ezekiel and Isaiah have asserted that the despoliation of land is not only inexpedient but wrong,” so his omission of Genesis 1:26’s claim of human dominion over the earth and its animals is surprising. Still, his conclusion sets the stage for what has become one of the clarion calls of environmentalism: “the extension of ethics to this third element in human environment is, if I read the evidence correctly, an evolutionary possibility and an ecological necessity.” (Leopold 1949, 202–3)

Leopold’s summary of the situation is worth considering in full, paying special attention to the neat inversion from beginning to end of the conqueror and the

scientist/scholar. What may be seen as—and is often presented as—an ecology of equals here is explicitly a replacement of the tyranny of force with that of expertise.

a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such.

In human history, we have learned (I hope) that the conqueror role is eventually self-defeating. Why? Because it is implicit in such a role that the conqueror knows, *ex cathedra*, just what makes the community clock tick, and just what and who is valuable, and what and who is worthless, in community life. It always turns out that he knows neither, and this is why his conquests eventually defeat themselves.

In the biotic community, a parallel situation exists. Abraham knew exactly what the land was for: it was to drip milk and honey into Abraham's mouth. At the present moment, the assurance with which we regard this assumption is inverse to the degree of our education.

The ordinary citizen today assumes that science knows what makes the community clock tick; the scientist is equally sure that he does not. He knows that the biotic mechanism is so complex that its workings may never be fully understood. (Leopold 1949, 204–5)

Leopold never considers the possibility of a conquering scientist, and his writing is certainly quite dated, still clinging innocently to the notion of a purely technological, peaceful utopia. Still, taking this quote along with the previous material, the core planks of the modern platform are all here: ecological disaster is caused by a certain aggressively dominant stance towards the environment; the notion that the land is there to provide for humanity is flawed; and that the “biotic mechanism” remains at its core a mystery, although a mystery that contains deeply relevant and important knowledge for humanity.

Leopold's analysis of the cause and solution are both quite clear: the key error has been an American insistence on tying conservation efforts to clearly identifiable economic analysis, where efforts at preserving the ecology only take hold if they are tied to material benefits for those involved. What is missing is an *ethic*, a sense of moral obligation that

extends beyond the community and into the land itself. “The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.” (Leopold 1949, 204) For Leopold, this is a natural evolution where ethics began as a person to person affair, expanded to include social concerns, and now needs to grow further to encompass both society and its environment. Unfortunately, “land-use ethics are still governed wholly by economic self-interest, just as social ethics were a century ago.” (Leopold 1949, 209)

The major obstacle in this next stage of evolution is the intermingled dependence of the farmer and the government, each expecting the other to either be the one who suffers or the one who provides recompense.

When the private landowner is asked to perform some unprofitable act for the good of the community, he today assents only with outstretched palm. If the act costs him cash this is fair and proper, but when it costs only forethought, open-mindedness, or time, the issue is at least debatable. The overwhelming growth of land-use subsidies in recent years must be ascribed, in large part, to the government’s own agencies for conservation education: the land bureaus, the agricultural colleges, and the extension services. As far as I can detect, no ethical obligation toward land is taught in these institutions. (Leopold 1949, 213–4)

Until care for the biotic community is felt as an ethical obligation, no progress will be made: “obligations have no meaning without conscience, and the problem we face is the extension of the social conscience from people to land.” (Leopold 1949, 209)

In order to build the foundation for an ethical relation to the land, Leopold makes one more interesting detour. He has already provided several examples of how intertwined parts of the environment are, and how an impact in one area can carry unexpected echoes in another; he has talked about the tangled web of relationships between predator and prey and about how a diversity of arboreal species are required for a healthy forest, where “the

interdependence of ... its constituent tree species, ground flora, and fauna is taken for granted.” (Leopold 1949, 212) However, something is missing, a final element that will make his ethical impulse ultimately compelling: energy. “Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals.” (Leopold 1949, 216) Leopold is far from a vitalist, but this final appeal definitely carries a vitalist appeal: ultimately, what connects the different components of the biota is an animating force, an energetic flow, that allows for their connections and interdependence. He goes to great lengths to explain these flows scientifically, as a result of various processes of decomposition, predation, erosion, etc., but the underlying premise remains.

Having made this final connection, the stage is set for Leopold’s summation, including the maxim that is oft-repeated and that seems to be his primary contribution to the ecological conversation that follows his work:

The ‘key-log’ which must be moved to release the evolutionary process for an ethic is simply this: quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise. (Leopold 1949, 224–5)

The last two sentences are often offered as a summary of how to “think ecologically,” and they certainly do encapsulate a large amount of ecological thought that both precedes and follows after Leopold. In the end, the point of this long detour through *A Sand County Almanac* comes to this: perhaps even unknown by the thinkers and writers who hold up this part of Leopold’s slim book, we also inherit the rest. Lurking behind the insistence on the value in and meaning of the biotic community is the elitism, the romantic nostalgia, the lurking shadows of unexamined gender assumptions and roles, the confused longing for

the perceived simplicity of the past that fills the preceding two hundred pages. When we are encouraged to *think like a mountain*, we are also nudged in these directions.

Go Tell It On the Mountain: The Whiteness of the Peaks

If you are incapable of seeing the beauty that's around you and the beauty of the people around you, if you are constantly running from them, then you can never make your peace, you're always trying to escape to somewhere else. But if we appreciated living in a multicultural neighborhood, appreciated something beautiful there, the beauty of people from different places who have different stories, then instead of running from it you'd be drawn to it.

Carl Anthony, *Ecopsychology and the Deconstruction of Whiteness*

One of the adaptations of this phrase is found in John Seed and Joanna Macy's *Council of All Beings*, a ritual widely performed at ecologically-focused gatherings, both academic in nature and not. The ritual revolves around individuals inhabiting a natural persona—flora or fauna, mineral or vegetal—and engaging in conversation with humans. The pattern is usually remonstrative and then forgiving, and the ritual is often seen as a way of “re-earthing,” or reconnecting with a perspective outside of our own. Just to be clear, this notion of “thinking like a mountain” has become a cultural meme, albeit a minor one, existing on its own and turning up in potentially surprising places. Consider Robert Hurley's introduction to his translation of Gilles Deleuze's *Spinoza: Practical Philosophy*, quoted at length due to its orthogonal relevance to other ideas presented elsewhere in this thesis:

The environment is not just a reservoir of information whose circuits await mapping, but also a field of forces whose actions await experiencing. In a human sense, it can be called the unconscious, or at least the ground on which the unconscious is constructed. Which of these actions are we capable of experiencing? What is a walk in the forest (where the tick is waiting to experience *us*)? And what new individual do we compose when we “think like a mountain?” For Deleuze (for Spinoza), Nature itself is an Individual, composed of all modes of interaction. Deleuze opens us to the idea (which I take as a contribution to ecological thought) that the elements of the different individuals we compose may be nonhuman *within* us. What we are capable of may partake of the wolf, the river, the stone in the river. One wonders, finally, whether man is anything more than a territory, a set of boundaries, a limit on existence. (Deleuze 2001, ii–iii)

We now move into difficult territory: as we shall see in chapter five, I remain absolutely committed to the possibility of positive personal change emerging from activities that engage with spiritual narratives. Side-stepping the question of reality for a moment, such experiences may indeed be energizing, revelatory, or otherwise highly powerful events. And that is often a very, very good thing. But that doesn’t exempt them from analysis, and there are two issues here worth teasing apart. The first is a simple psychoanalytic exploration of the importance in these narratives of the *re*. We are always exhorted to *reconnect* with the earth, to *return* to a primal awareness of nature, to *rediscover* knowledge that has either been lost or is only found in a primitively defined other. This is a classic grand narrative—it is the longing for Eden and the search for Israel, the desire to return to the womb and the shining city on the hill, and it plays out in a curious way. Ecological analyses often attribute the causes of the environmental issues to another set of grand narratives: the dependence on technology in the West; the ways we have become separated from our bodies and our emotional selves; the aggressive and repressive dominance of masculine qualities and modes of being over feminine. In this, there is an implied clarity where the environmental movement itself is seen as immune to such critique, leaving its own operational logic largely unexamined.

I would like to walk a fine line here: the goal is not to deconstruct ecological thinking, but rather to enrich it, to prod it and poke it in some hard to reach places with a hope that, by leaning into some of its discomfort, a stronger consideration may emerge. The first foray into this will be guided by the conversation between Roszak and Anthony, captured in Roszak's anthology, *Ecopsychology: Restoring the Earth, Healing the Mind* (note the *re*, again). Anthony summarizes his position at the start of the interview:

Ecopsychology tells us that the healing of the self and the healing of the planet go together. The environmental justice movement could benefit from that insight; it needs a greater understanding of the psychological dimensions of environmental racism. But a framework for such an understanding hasn't yet been established. There is a blind spot in ecopsychology because the field is limited by its Eurocentric perspective, in the same way that the environmental movement as a whole has been blind to environmental racism. There are a lot of people who would like to hear the voice of the Earth who are not currently being reached by the movement for Deep Ecology, which I believe, can be seen as the basis for ecopsychology. (Anthony and Roszak 1995, 264)

The challenge for thinking ecologically is that, in a subject that is staggering in its diversity and scope, “we have stories that are lies. But what may be worse, we only have a limited range of stories, when we ought to have a much fuller range.” (Anthony and Roszak 1995, 272) Note that Anthony is not arguing against all of the existing stories (although there are certainly motifs—most notably that of “purity” that remain profoundly troubling). Instead, there is a desire for more: more stories, more complexity, more perspectives, more exploration of the *differences* that reveal all of the ways in which ecology matters. In this sense, when Anthony asks “why is it so easy for these people to think like mountains and not be able to think like people of color?” (Anthony and Roszak 1995, 273) he is calling directly for the same outcome as The Council for All Beings, but with an expanded focus on the inter-species. This speaks directly to the heart of the issue: in a movement often

concerned with understanding, supporting, and preserving external diversity, there is a surprising tendency towards internal monoculture, towards relatively simplistic assumptions of value and origin. And if there is anything that is definitionally opposed to the aims of an ecologically grounded activism, it is monoculture based on a set of theoretical abstractions.

Abstraction means distance from immediate experience, from annoyingly concrete particulars, the substitution of a remote symbol for a given sensuous reality. But that's what ecology is all about: *the real complexity*. You have to deal with the fact that there is a river here, or deal with the fact that bugs come. In contrast, the whole idea of "perfection" leads to monoculture: flatten the land, have only one crop, come along with an airplane and spray. You don't have to deal with the fact that this is an organic process. (Anthony and Roszak 1995, 272)

For Anthony, the root of the problem is clear: it is the destructive power inherently rooted in "the monolithic human identity that has been built around the mythology of pure whiteness." (Anthony and Roszak 1995, 277) This is not, in general, a comfortable subject for environmental thinkers: most often, a hasty retreat is beaten under the banner of the ecology surpassing any narratives of class or race or a romanticized vision of a native tradition is held forth as proof of the diversity of thought. Rarer is a recognition that race and ecology are explicitly linked considerations, that the narrative of the land—especially in the United States of America—is inherently entangled with the narrative of those that were either moved off the land or brutally imported to cultivate it in order to build the fortunes of others. Ignoring racism—or blithely sweeping it away under the banner of an ecological humanism—does not eradicate it.

Anthony argues that the solution to this lies in a proliferation of narratives, in a welcoming of alternatives into the stories that form the grounding for ecological thought. The goal of all this is finding "a way to build a multicultural self that is in harmony with an

ecological self. ... An ecopsychology that has no place for people of color, that doesn't deliberately set out to correct the distortions of racism, is an oxymoron." (Anthony and Roszak 1995, 277) And he remains optimistic about this approach:

If you are actually in dialogue with people, and somebody tells you you don't have it right, then you say, "Well, tell me what is right." And then you say, "Okay, I'll remember that." And the next time, you tell it differently. Not being right is only a problem when you have a very tenuous, fearful relationship with somebody. But if you are in substantial dialogue with another person, then you learn through trial and error. (Anthony and Roszak 1995, 274)

The problem, then, is one of engagement, with an explicit critique of what Anthony sees as a misguided focus on the non-human at the expense of direct encounters with the rich diversity of the human world. While his argument highlights several issues in ecological thinking that are very important for our considerations, it is a little unfair. That is, pursuing that logic would reduce all worthwhile activity to social activism or, more limited yet, psychology. Those are both worthy pursuits, but they are clearly not the *only* worthy pursuits (even if certain social activists or psychologists may disagree). The challenge is to hold Anthony's narrative critique close while still allowing a focused contemplation of the non-human.

The relevance to Muir of our three-step diversion is twofold. First, there is the recognition of the power and the continued presence of "whiteness" in the unfolding of ecological thought. Second, this discussion moves us towards an underlying issue that I want to spend some time surfacing and exploring, that of subjectivity and, more specifically, that of how to attempt to cross the chasm between subjectivities: what is it that is encountered when we encounter nature? Or, each other? In bringing the discussion of Muir forward in time, this question of subjectivity will loom large, as will that of the

limits and function of scientific knowledge, especially when it relates to ecological questions. If I am building a bridge with Muir's nineteenth century wanderings forming the abutment at one end, then deep ecology and more specifically, Norwegian philosopher Arne Næss will anchor the conversation at the other.

Chaos: A Pause for Science

Fantasy is not just fantasy. It is also ethnography going further than anthropologists had yet dared to tread.

Charlotte E. Hardman, *He May Be Lying But What He Says Is True*

In our crossing, we return, momentarily, to the question of science and to the discussions of the previous chapter, albeit from a slightly different perspective. Here, I want to focus on a peculiar temporal twist in ecological science, where we run full speed into the limits of mechanical projection. The crux of the issue is nothing new, but its implications are far-reaching. As an illustration, I will return again to the history of manned flight in space, where we find one of the peaks of classical physics: we are able to project the forces required to land various size craft onto surfaces roughly a quarter-million miles away, accounting for changes in velocity due to crossing through a variety of atmospheric conditions and boundaries, changes in direction from the smallest course corrections, and changes in payload from a process of gradually jettisoning unneeded fuel reserves. It's really quite stunning. And it works because the interaction of forces involved is relatively limited: the spacecraft is but so large and the bulk of the journey is through

space, which is mostly, well, space. These efforts are scheduled multiple times per year across the globe, their frequency impacted by the vagaries of geo-political and economic forces, but their occurrences are impacted most directly by a single uncontrollable variable: weather. Weather patterns represent a limit of knowledge, a limit that cannot be solved by the same tools that send rockets soaring in flight towards Mars. And the reason is that *it's just too complicated*. We know how to make one hundred thousand pounds of spacecraft land on the Descartes Highlands (Apollo16). But we can only guess at whether or not it will rain on the morning of the launch.

This uncertainty is tied up with time: the physics of motion are testable and repeatable and, hence, predictable. But we can't do the same for systems so large or so complex that they brush with the boundaries of chaos (of course, nor can we do it for systems so small they move into the quantum realm). However, as soon as the moment passes and we move from predicting what will happen to measuring and analyzing what actually did happen, we are once again returned to solid ground. But the incredible volume of knowledge about the past can only reduce uncertainty in future predictions: it cannot eradicate it.

Ecological systems are, in many cases, several degrees more complicated than weather patterns (demonstrated most clearly by the fact that the weather is merely one of the interlocking systems that impact a given ecology). So, in many cases we possess an exquisite understanding of the present and the past, which then leads to our making various pronouncements about the future. And, of course, these are usually dire, taking the form of *if the polar caps keep melting at the current rate, all coastal cities in North America will*

be flooded by 2030. Note the structure: intense measurement of the immediate past leading to a wider projection into the future.

The problem is that our ability to project out from the current situation is horribly flawed: the global ecology (and, for that matter, the global economy) is just too vast, too resilient in some places and too fragile in others, for those predictions. We know that the chemical composition of the atmosphere has changed dramatically in the last hundred years, we know that the oceanic dead zones are at their largest recorded size, we know that global weather patterns are less stable than they were in the recent past. But we can only guess at the impacts of these events, and all too frequently those guesses are more in the service of various political narratives than of any true exploration of possibilities. Amidst dire predictions, and after several years of severe decline, the salmon harvest in 2010 was the largest seen in dozens of years (Eggers and Carroll 2011).

A group of scientists from all parts of the world met in 1984 at São José dos Campos in Brazil. The meeting, held at the request of the United Nations University, posed the question, "How does human intervention in the natural ecosystem of the humid tropics affect the forest, the regions around it, and the whole world?" It soon became clear that, whatever their disciplines, the specialists had little to offer other than a frank and honest admission of ignorance. Asked, "When shall we know the consequences of removing the forests from Amazonia?" they could only answer, "Not before the forests have gone." (Lovelock 1988, 146)

This is a situation that demands that dreaded bugaboo of modern times, complexity: in an age where a five paragraph article on cnn.com requires three one sentence bullet points at the top for those of us too busy to read the entire thing; where media consumption is being driven by the one hundred and forty character summary tweet, this is problematic. Dire predictions of disaster make great headlines, but are usually based on highly questionable science. The entire question is incredibly more complicated than we can easily summarize.

Organisms, ways of life, and interactions in the biosphere in general exhibit complexity of such an astoundingly high level as to color the general outlook of ecologists. Such complexity makes thinking in terms of vast systems inevitable. It also makes for a keen, steady perception of the profound *human ignorance* of biospherical relationships and therefore of the effect of disturbances. (Næss 1995a, 6)

To comprehend all of this, we need “less prognosis, more clarification of possibilities. More sensitivity towards continuity and live traditions, and—most importantly—towards our state of ignorance.” (Næss 1995a, 6)

It fascinates me that the key moment here is that of the entrance of fantasy, of the imposition of creative imagination into the problem, and that this notion is so rarely recognized. One of the challenges to anyone who wishes to think about these ecological issues is to find a way to harness our own projections, avoiding both Eden and the apocalypse. A vision of a future where we will muddle along, reacting as best we can to the changing world around us may not be compelling enough to become a best-seller, but it needs to become a goal, allowing a middle ground between the assumption that technology will cure any of the myriad problems it generates and that of inevitable global catastrophe.

Crossing Chasms, Crossing Species

We look at an animal and see a mirror. The obsession with putting ourselves at the centre of everything is the bane not only of theologians but also of zoologists.

Yann Martel, *Life of Pi*

Thinking ecologically requires thinking broadly and deeply about a wide array of

things. It is a tangled, complicated, difficult subject. I would affirm with Donna Haraway, who we will visit with in more depth momentarily, that “the point is not to celebrate complexity but to become worldly and respond.” (Haraway 2008, 41) Two parts of Haraway’s phrase speak to me: first there is a call to the embodied world, an insistence that the issues of ecology are issues that must be worked out in the flesh. That is not to deny the importance of theory, only to affirm the importance of praxis. Indeed, that is the second question that Haraway raises: she urges us to “become worldly,” but what is it that we are becoming if we do so?

This quickly becomes more a problem of philosophy than practicality or politics. Anthropocentrism is a near universal constant across human history—and one that makes intuitive sense when carefully considered. We only have access to one subjectivity, our own, and we struggle mightily to extend that to other humans, let alone when trying to understand what truly thinking across species might necessitate. This is not a simple question. In thinking through it, I find Haraway’s work to be quite useful, especially her extended meditations on human/canine relationships in *When Species Meet*. Before looking more closely at her arguments, however, I want to examine her description of herself *before* she dove deeply into considerations of her subject matter. With her typical playful complexity, she writes that

In the beginning of everything that led to this book, I was pure of heart, at least in relation to dog breeds. I knew they were an affectation, an abuse, an abomination, the embodiment of animalizing racist eugenics, everything that represents modern people’s misuse of other sentient beings for their own instrumental ends. Besides, so-called purebreds got sick all the time, as well they should from all that genetic manipulation. Really bad, in short. Mutts were good as long as they were sterilized; trained to a low standard—lest human control play too big a role—by positive methods; and off leash in every possible situation. Fertile street and village dogs were good because they lived in the third world or in its moral and

symbolic equivalent in doggish humanism, but they needed to be rescued nonetheless. At home, in my progressive, American middle-class, white bubble, I was a true believer in the Church of the Shelter Dog, that ideal victim and scapegoat and therefore the uniquely proper recipient of love, care, and population control. Without giving anyone quarter about our collective and personal obligations to mutts and shelter dogs, I have become an apostate. I am promiscuously tied with both my old and new objects of affection, two kinds of kinds, mutts and purebreds. Two terrible things caused this unregenerate state: I got curious, and I fell in love. Even worse, I feel in love with kinds as well as with individuals. (Haraway 2008, 96)

This is a pattern that we will encounter again in different contexts, where clearly and devoutly held assumptions, ideals that seem instinctive and natural in their formation, are, when pressed, less resilient than anticipated. For Haraway, her loss of romanticism with regards to the webs of interaction between canines and humans leads to two breaks: first, with the liberal outlook outlined above, but second with the use of a non-human alterity in service of fashionable metaphors. Here, she collides directly with two thinkers that in other contexts both she and I hold in the highest esteem: Gilles Deleuze and Félix Guattari. The contested territory is a chapter in Deleuze and Guattari's *A Thousand Plateaus* titled "1730: Becoming-Intense, Becoming-Animal." As Haraway summarizes,

A Thousand Plateaus is a part of the writers' sustained work against the monomaniacal, cyclopean, individuated Oedipal subject, who is riveted on daddy and lethal in culture, politics, and philosophy. Patrilineal thinking, which sees all the world as a tree of filiations ruled by genealogy and identity, wars with rhizomatic thinking, which is open to nonhierarchical becomings and contagions. So far, so good. (Haraway 2008, 28)

The difficulties begin when Deleuze and Guattari turn their gaze outwards to the animal kingdom. The moment of introduction is worth considering in full:

A becoming-animal always involves a pack, a band, a population, a peopling, in short, a multiplicity. We sorcerers have always known that. It may very well be that other agencies, moreover very different from one another, have a different appraisal of the animal. One may retain or extract from the animal certain characteristics: species and genera, forms and functions, etc. Society and the State need animal characteristics to use for classifying people; natural history and

science need characteristics in order to classify the animals themselves. Serialism and structuralism either graduate characteristics according to their resemblances, or order them according to their differences. Animal characteristics can be mythic or scientific. But we are not interested in characteristics; what interests us are modes of expansion, propagation, occupation, contagion, peopling. I am legion. The Wolf-Man fascinated by several wolves watching him. What would a lone wolf be? Or a whale, a louse, a rat, a fly? Beelzebub is the Devil, but the Devil as lord of the flies. The wolf is not fundamentally a characteristic or a certain number of characteristics; it is a wolfing. The louse is a lousing, and so on. What is a cry independent of the population it appeals to or takes as its witness? Virginia Woolfs [sic] experiences herself not as a monkey or a fish but as a troop of monkeys, a school of fish, according to her variable relations of becoming with the people she approaches. We do not wish to say that certain animals live in packs. We want nothing to do with ridiculous evolutionary classifications à la Lorenz, according to which there are inferior packs and superior societies. What we are saying is that every animal is fundamentally a band, a pack. That it has pack modes, rather than characteristics, even if further distinctions within these modes are called for. It is at this point that the human being encounters the animal. (Deleuze and Guattari 1987, 239)

Animals exist in multiplicities: we are only becoming-animal (a good thing, something all fellow sorcerers should aspire towards) if we are doing so in that context. This is actually not all that radical of a concept, although of course the language-game engaged in here is radically different, consider the following from James Lovelock (note also the lovely happenstance of a reference to the molecular, another favorite trope of Deleuze and Guattari in *A Thousand Plateaus*:

Life is social. It exists in communities and collectives. There is a useful word in physics to describe the properties of collections: *colligative*. It is needed because there is no way to express or measure the temperature or pressure of a single molecule. Temperature and pressure, say the physicists are the colligative properties of a sensible collection of molecules. All collections of living things show properties unexpected from a knowledge of a single one of them. (Lovelock 1988, 18)

But for Deleuze and Guattari, it is not sufficient to be in community; instead the focus falls onto the anomalous, a concept defined initially by its negative and then in a difficult passage of relations.

The anomalous, the preferential element in the pack, has nothing to do with the preferred, domestic, and psychoanalytic individual. Nor is the anomalous the bearer of a species presenting specific or generic characteristics in their purest state; nor is it a model or unique specimen; nor is it the perfection of a type incarnate; nor is it the eminent term of a series; nor is it the basis of an absolutely harmonious correspondence. The anomalous is neither an individual nor a species; it has only affects, it has neither familiar or subjectified feelings, nor specific or significant characteristics. Human tenderness is as foreign to it as human classifications. Lovecraft applies the term “Outsider” to this thing or entity, the Thing, which arrives and passes at the edge, which is linear yet multiple, “teeming, seething, swelling, foaming, spreading like an infectious disease, this nameless horror.” (Deleuze and Guattari 1987, 244–5)

Oh. Oh dear. Recognizing, perhaps, where they have gone, Deleuze and Guattari try another avenue, claiming that “the anomalous is neither an individual nor a species” before settling that instead, “It is a phenomenon, but a phenomenon of bordering. This is our hypothesis” a multiplicity is defined not by the elements that compose it in extension, not by the characteristics that compose it in comprehension, but by the lines and dimensions it encompasses in ‘intension.’” (Deleuze and Guattari 1987, 245) This is more complex, but also more reasonable: becoming-animal is a movement at the borders of the pack, something that combines acceptance and transgression, something that conspires to add a change in speed to the movement of the collection seen as a single entity. This is the argument against seeing the anomaly as an “exceptional individual; that would be to equate it with the family animal or pet, the Oedipalized animal as psychoanalysis sees it, as the image of the father.” (Deleuze and Guattari 1987, 244) Clearly, exceptionalism is merely a guise of traditional filiation—the best son, the exemplar that spills beyond the pre-established categories, the next improvement in performance and competition. We become-animal not in crossing a boundary but in transforming the category as we move past its threshold, in blurring and overlapping or trail as we do so. The point is, though, that we don’t need to become demonic snails from Cthulhu leaving behind an eerie slime

as we do so.

Earlier, and in a quote we will grapple with in our final chapter, Donna Haraway had claimed that, “though both are bound in the spiral dance, I would rather be a cyborg than a goddess.” (Haraway 1991, 181) There is consistency with her most succinct riposte to Deleuze and Guattari: “I think we learn to be worldly from grappling with, rather than generalizing from, the ordinary. I am a creature of the mud, not the sky.” (Haraway 2008, 3) Haraway has great sympathy for notions of multiplicity, for the rejection of the hierarchy and linear correspondences of filiations. And the questions asked in “1730: Becoming-Intense, Becoming-Animal” are in essence, her own. Haraway begins *When Species Meet* with a simple declaration of purpose: “Two questions guide this book: (1) Whom and what do I touch when I touch my dog? And (2) How is ‘becoming with’ a practice of becoming worldly?” (Haraway 2008, 3) She returns to these questions again and again, and by the end of the text what is most clear is that there are no easy answers: inquiring into exactly how we bridge the intra-species divide reveals more and more points of both connection and disconnect, moments of understanding and moments of absolute alterity. But there is always (at least) an other involved, even if identification of what exactly that might be is quite difficult. Haraway reinforces, again and again, that

none of it can be approached if the fleshly historical reality of face-to-face, body-to-body subject making across species is denied or forgotten in the humanist doctrine that holds only humans to be true subjects with real histories. But what does *subject* or *history* mean when the rules are changed like this? We do not get very far with the categories generally used by animal rights discourses, in which animals end up permanent dependents (“lesser humans”), utterly natural (“nonhuman”), or exactly the same (“humans in fur suits”). (Haraway 2008, 66–7)

She never allows herself to, as Deleuze and Guattari very easily do, lose sight of an *actual* animal, of the specific dog with which she becomes ... what? Something, something more

than a woman and a dog, but also not something lycanthropic, something that preserves the disparate natures while honoring the often slim zone of overlap.

Contrast the italicized original in *A Thousand Plateaus*: “*anyone who likes cats or dogs is a fool.*” (Deleuze and Guattari 1987, 240) Deleuze and Guattari have no time for pets, no regard for their relations, and no patience for those enamored by their presence.

The old, female, small, dog- and cat-loving: these are who and what must be vomited out by those who will become-animal. Despite the keen competition, I am not sure I can find in philosophy a clearer display of misogyny, fear of aging, incuriosity about animals, and horror at the ordinariness of flesh, here covered by the alibi of anti-Oedipal and anticapitalist project. (Haraway 2008, 30)

There is intersection here with the discussion of Anthony above: Deleuze and Guattari have no consideration for what is lost when we switch planes of thought, when we move from a consideration of the flesh in front of us to the lofty heights of abstraction. Thinking like a mountain and thinking like a pack may be very different, but they may be subject to the same critiques of inheritance and assumption.

It may seem strange to claim that Haraway has helped me think about these issues, given the profound lack of clarity in her own conclusions. In one way, however, that is the point: communication between species is always already a becoming, a process of movement, in Haraway’s words, “animals are everywhere full partners in worlding, in becoming with. Human and nonhuman animals are companion species, messmates at table, eating together, whether we know how to eat well or not.” (Haraway 2008, 301) These issues are even more problematic when the other under consideration cannot even be identified: if it is so difficult to understand how we partner with another species in the act of worlding, how do we ever hope to do so with the exterior world, with nature itself? We

may not fully grok how we interact with an animal companion, but we can at least make inroads into the simple definitional questions, separating at the practical level at least, the cat from the furniture, the mythologized (although Deleuze and Guattari would scream at the word) border-dwelling pack member from the person in front of me. But when we turn back to nature, we are led almost inexorably into a philosophical swamp: it turns out that even *defining* the true other in ecological terms becomes incredibly difficult. We are encouraged to take into account the needs of the river, the mountain, the swamp and yet any attempt to figure out exactly what that refers to—what are the boundaries of the swamp? What is included in the river?—is quite confounding.

At the same time, there is something equally compelling about the need for a correction to our rampant anthropocentrism: it has become increasingly clear that a conception of the world that sees humanity as isolated and separate from our surroundings, that places the bounty of the world—animal bounty, vegetable bounty, mineral bounty—at our pleasure, is somehow fundamentally short-sighted. If there is no desire to hasten a coming apocalypse (this is actually a relatively common argument of several strains of conservative Christianity, used to defend environmentally destructive or exploitative practices), then something needs to change and, of course, we would prefer that change to be grounded in something that feels solid and stable, whether that be found in science or philosophy or somewhere else. Hence we return to the original two problems: the scientific evidence is tightly bound to the present while the philosophical remains lost in a complex web of subjectivity.

Deep Ecology

Ultimately, deep ecological awareness is spiritual or religious awareness. When the concept of the human spirit is understood as the mode of consciousness in which the individual feels a sense of belonging, of connectedness, to the cosmos as a whole, it becomes clear that ecological awareness is spiritual in its deepest essence.

Fritjof Capra, *The Web of Life*

At the Third World Future Research Conference in Bucharest in 1972, Arne Næss first used the term “deep ecology movement” in reference to a growing body of work (his own and many others) concerned with a new framework through which to view humanity’s interactions with the external world. (Næss 2008, 25) This phrasing is consistent with Næss’ outlook in general: he was reluctant to take up a mantle of leadership and reluctant to even assert the existence of deep ecology itself: it was, instead, the deep ecology movement, which brought together a diversity of views and viewpoints under a shared set of goals. Monoculture, for Næss, was anathema or, more strictly speaking, impossible: nothing exists on its own. “Pluralism is inescapable and nothing to lament. Reality is one, but if accounts of it are identical, this only reveals cultural poverty.” (Næss 2008, 182)

Næss remains for me the most direct descendant of Muir, and before we explore the philosophy surrounding his notion of deep ecology, a brief biographical sketch may help illustrate the similarities between the two men. Most strikingly, both remained, to the end of their days, committed to a first-hand encounter with nature that permeated their theoretical work. Næss famously built and maintained a small and isolated cottage in central Norway where he would spend weeks of each year. This cottage, named Tvergastein, was more than a place of refuge for Næss, it was a touchstone to remind him

of the beauty of the stark Nordic countryside, of the joy he found in hiking and climbing the surrounding peaks, and of the value of isolation as a tool for contemplative development. David Rothenberg describes the cottage and its surroundings thus: “In central Norway there is a mountain, Hallingskarvet, a large, long ridge like a huge loaf of bread. Imagine that it rose too fast in the oven, making a sharp cliff on the southern side of the crust. Beneath this precipice stands a tiny hut, at the place called Tvergastein.”

(Rothenberg 1993, xiii) Throughout his life, Næss had “done much of his most original creative writing and other work” in this small space, surrounded by “endless cliffs to climb and a view with few equals for its extent and impressiveness.” (Næss 2008, 9)

Arne Dekke Eide Næss was born in January of 1912 “in a house in Slemdal, on the outskirts of Oslo, with a wild garden that blended into woods.” (Næss 2008, 8) He was “the unexpected last child of four. His father died less than a year after he was born, and his mother, Christine, hired a governess to take care of the little one. The relationship between mother and son remained strained, and young Arne developed an aversion to his mother’s love of language and emotional exaggeration.” (Rothenberg 1993, 1)

Næss was a gifted child, a loner who spent more time examining what he saw as the small beauties of nature than engaging in social play with other children. Isolation came easy to him in many forms, including as a defense mechanism against his mother. In his own words:

I adopted a tremendous resistance to emotion. When I should be spanked, for instance, normally I should have been carried off to the second floor, or dragged off to a sofa, but when spanking was on the program, I went by myself up the stairs to the second floor, and lay down on the couch to await my fate. I tried to have no reactions before, during, and after, and this was terrible for my mother. When she scolded me, I was just bleak and I would not talk to her for a long while. She was trying to connect with me, and I had some feeling of power over her because I

would resist her. Later, this led me to place an enormous weight on impartiality. I tended to use language in a bureaucratic or scientific way, valuing so-called objectivity. (Rothenberg 1993, 6–7)

The discipline this required served him well in his academic work, and at age 27, Næss was the youngest person appointed full professor in the hundred-plus year history of the University of Oslo. He taught there until 1969, taking early retirement then “to devote his remaining years and energies to the active support of the long-range deep ecology movement.” (Næss 2008, 11) During his years as a professor, he became a devoted follower of Gandhi, or, at least, of a version of Gandhian non-violence and actively participated in anti-Nazi resistance movements. These last two items are important in our considerations, as they underline how, for Næss, there was always a necessary ethical component to the philosophical considerations that engaged him so deeply.

This is not, however, a chapter devoted to Arne Næss. Instead, I want to use his writings as part of a synthetic thought-experiment aimed at extending a consideration of Muir into contemporary times. I intentionally refrain from labeling this thinking “beyond,” rather it is an extension, a lengthening of Muir’s shadow if you will. Næss’ environmental contributions constantly mediate between two poles: at one hand, he is a gestalt thinker, constantly concerned with the totality of context that comprises our relations and perceptions; on the other, he spent his life fascinated with wonder at small things, and indeed made a point of preferring the stark beauty of a single small flower to that of, say, a jungle in bloom. These ideas, when not the subject of memoir or casual recollection, are expressed with a philosophic depth and rigor that reflects his training and expertise; for example, when outlining the importance of gestalt, Næss writes (and I quote at length):

When absorbed in the contemplation of a concrete, natural thing, a person does not experience a subject-object relation. Nor does a person have this experience when absorbed in vivid action, whether in movement or not. There is no epistemological ego reaching out to see and understand a tree or an opponent in a fight, or a problem of decision. A tree is always part of a total, a gestalt. Analysis may discover many structural ingredients, sometimes an ego-relation, sometimes not. The gestalt is a whole, self-contained and self-sufficient. If we call it “experience of the gestalt,” we are easily misled in a subjectivist direction

When describing a constellation of gestalt relations, we must not let the usual stress on the epistemological subject-object distinction dominate the expression. In a spontaneous experience, there may or may not be an ingredient corresponding to the distinction. ...

If “cheerful tree” and “dark and threatening tree” are two spontaneous expressions, analysis in terms of relations may conclude that they refer to “the same” tree. But this sameness is definable only in terms of an *abstract structure*, whereas utterances refer to two *concrete contents*. (Næss 2008, 76)

The argument here centers on the dangers inherent in separating the world into a subject/object dichotomy. Næss instead insists on the ubiquitous presence of a gestalt, a totality in which we are always already embedded in the same tableau that we observe and that, indeed, different moments of perception argue against a continuity of being with regards to external objects. This is, to say the least, problematic: if the identity of the tree is not consistent, what claim do we have that *your* identity is consistent between the days I love you and the days I loathe you? And, if that identity is unstable, how do we create ethical norms that govern our treatment of each other?

Næss’ answer to this—some may claim his answer to everything—lies in his concept of *ecosophy*, an attempt to provide a philosophical framework for life. Næss names his own personal philosophy *Ecosophy T*, however in a more general sense, an *ecosophy* is

a philosophy of ecological harmony or equilibrium. A philosophy as a kind of *sofia* [or] wisdom, is openly normative, it contains *both* norms, rules, postulates,

value priority announcements *and* hypotheses concerning the state of affairs in our universe. Wisdom is policy wisdom, prescription, not only scientific description and prediction.

The details of an ecosophy will show many variations due to significant differences concerning not only ‘facts’ of pollution, resources, population, etc., but also value priorities. (Næss 1995a, 8)

The need for ecosophies comes from a set of somewhat obvious questions:

Supporters of the deep ecology movement refer approvingly to a diversity of philosophers, cultural traditions, and religious trends. Some authors ask for clarification: Where is the essence or core? Is there a definite general philosophy of deep ecology, or at least a kind of philosophy? Or is it essentially a movement with exasperatingly vague outlines? (Næss 2008, 105)

A Næssian ecosophy has four interrelated levels, moving from the most abstract through the concrete practicalities that govern our everyday behavior. Explicitly ecumenical, the crux of this structure (which Næss sketches out in what has become known as the “apron diagram”) is at the second level, that of a *platform*, “preferred to *principle*, because the latter may be misunderstood to refer to ultimate premises.” (Næss 2008, 105) While this model is applicable across concerns, Næss and his followers nearly universally apply it to issues of ecology—therefore, the second level becomes synonymous with “the platform of the deep ecology movement” specifically. The structural value of the apron diagram is that it explicitly creates space for different underlying “ultimate premises,” (the “strings” of the apron, and the foundation of our motivations) that agree on a specific platform, leading to largely overlapping (but not totally congruent) sets of “general views” and “concrete decisions.” (Næss 1995a, 11–12)

The strings are vital for Næss, as they simultaneously allow him to welcome a wide diversity of motivations *and* to enforce agreement on a common set of conclusions. He introduces this by writing that

the platform of the deep ecology movement is grounded in religion or philosophy. In a loose sense it may be said to be derived from the fundamentals. The situation only reminds us that a set of very similar or even identical conclusions may be drawn from divergent premises. The platform is the same, the fundamental premises differ. One must avoid looking for one definite philosophy or religion among the supporters of the deep ecology movement. Fortunately there is a rich manifold of fundamental views compatible with the platform of the deep ecology movement. (Næss 1995a, 11)

It's a tidy solution, and one that has some support practically, as Næss is surely correct in writing that "in spite of different philosophical and terminological leanings, the three groups—the supporters of social ecology, the ecofeminists, and the deep ecology movements—cooperate well in praxis, learning from each other's special activities. The frontier of the work is long, and we need to express our appreciation of work done in different sectors from our own." (Næss 2008, 101)

Næss offers a fascinating combination of two very disparate worlds: on the one hand, his commitment to rigor, to the exactness of language, to the power held in specificity give him a philosophical grounding that thoroughly eludes Muir. On the other, his unwavering loyalty to his conception of gestalt, to the importance of the total experiential moment, to the vital importance of recognizing the wide disparity of simultaneous experience that individuals may undergo all contribute to a much more humanist position than might be expected. While resistant to the term *dialectic*, Næss clearly saw a parallel process at work: "If you leave out the nonprecise things, you are lost in accuracy. One must go back and forth, from precision to ambiguity. Rarely in philosophy can the vague be eliminated." (Rothenberg 1993, 29)

The roots of both of these areas of focus reach back to Næss' youth, most clearly to the years spent in Austria just before the second World War, where in "Vienna, the city of

neurosis itself, an intellectual center on the verge of annihilation by the Nazi threat, home of Freud's psychoanalysis, as well as the site of the latest movement in philosophy, known as logical empiricism (positivism) developed by a group of philosophers known as the Vienna Circle." (Rothenberg 1993, 21) Næss recalls that, "by chance and luck, I went straight into the graduate seminar of the logical positivists, with Moritz Schlick, Rudolf Carnap, Friedrich Waismann, Herbert Feigl, and others ... They were so nice to me as a very young man. It was a miracle that I could be there. Their discussion was tough, but clear, without nonsense." (Rothenberg 1993, 23)

At the same time, Næss entered an intense, six day a week, course in psychoanalysis, proving himself quite compatible with the stream of consciousness discussions that it required. At the time, completion of a certain number of hours of treatment "on the couch" was all that was required to become authorized to treat patients on one's own, and it seems that Næss was at least toying with this idea as a prospective path. However, after just over a year, he realized that "even if I wasn't sure I wanted to be a teacher, I was certain I wouldn't be an analyst." (Rothenberg 1993, 35) However, at this time, he began to serve in an unofficial capacity at a mental institution and this experience appears to have opened up his own sense of the possibilities of human contact: "That's what made me both sensitive to the full range of human suffering and aware of the ocean of possibilities one has for really helping other people. I saw that just sitting there made a difference to her." (Rothenberg 1993, 37) This is not an easy conclusion for Næss, as he is also sensitive to the utter bleakness of the situation, as well as to the flimsy comfort that living may contain. The series of recollections is worth quoting in full, as the clarity of

vision and the unflinching encounter with the less palatable conclusions it may reveal are consistent with Næss' overall presentation.

DR: Now, how did this connect to the fact that you always felt a distance between yourself and other people?

AN: That's a curious thing, that distance may very well go together with a feeling of sympathy, empathy, and grasp of how much affliction there is all around. ...

It made a tremendous impact on me to sit there with another human being, and once she had a clear enough moment to say, "Now I am completely crazy." It helped her to have somebody in the neighborhood. She was in a small room, alone, in a straitjacket, and there was distress and panic. What a fate: to sit alone like that, for hours and hours every day, and with no prospect except to get out and then try to kill yourself.

DR: From your experience with it, did the field of psychiatry offer any cure for this?

AN: At the time, paranoid-schizophrenic people had little hope. So they were sent to a particular institution, where they were put away, like old furniture that should not be destroyed but somehow just kept around. They would be sent to Steinhof. Some of them know of Steinhof and the possibility that they would be sent there, and there was a lot of screaming.

DR: And from there, there was no return?

AN: It was bleak. I hope that this patient I have talked about got out of the clinic and was successful in suicide. From that time, I viewed suicide as a very natural thing that many people could commit for good reasons.

DR: Is that because life itself is not of value, with on a certain kind of life, a certain quality of life, worth living?

AN: *Life is wonderful, delightful, and fantastic, but to be alive is a completely different thing.* Under certain circumstances, it is so awful that suicide should not be discouraged. I am talking about cases where someone has been suffering a long time and it's quite clear that they would prefer to stop living. We are all going to stop, we all have limited time, and it's not of value to go on as long as possible. Reasonable people, after cool reflection, may prefer to stop, to have an abrupt close, and look back to some good memories, and decide it was enough.

I never seriously thought I would be a psychiatrist, but I was grateful to all those who showed me these things. Much later, I gave a lecture to the students of Oslo University on the meaning of life, because so many young people search for something they can do that really would make a difference for humanity. I said,

“Well, it’s very easy, just sit down. Sit down with somebody who is in extreme pain.” It’s tremendously simple if you have some empathy. Go out to either the prisons or the clinics. I was not the same person after I heard those screams. (Rothenberg 1993, 37–8)

This moment is notable in Næss’ conversations with Rothenberg, as elsewhere a much more limited portrait of a loner emerges, one who often shies away from interactions with others even at their times of need. Næss confesses that “I still live too much in my own world. This is worst when it compromises the norms of friendship. A couple of people have complained, saying that when they were in real trouble, I was not very helpful. Even if I may worry a lot about their situation, I was not very helpful.” (Rothenberg 1993, 186)

This stance for Næss is rooted, oddly as it may seem, in an intensely felt humanism:

When it really comes to a question of this, I try to say, “By God, you are on par with anybody else and you are different, but this is within the human range of differences, and you will find others who are different in approximately the same way, and you will have good feeling for what you are.” On the radio, I have said this: “Everybody should feel equal to Einstein and Leonardo da Vinci *as human beings*, unique and infinitely rich.”

I don’t know how I got that feeling, but when I am together with one human being in the mountains or in other situations where we get close, I never have any feeling that certain people are boring or that certain people don’t have an inner life. If they were able to articulate exactly what they were experiencing, then, of course, it would be a book of great importance. (Rothenberg 1993, 183)

Distance is a constant in Næss’ recollections, from his initial climbing excursions, which revolved around a series of calculated achievements, where he and a friend were focused on reaching “the top of as many mountains as possible—counting each mountain, and also calculating the number of kilometers needed for the climb, the distance in kilometers, and then the height. When we went on trips we had a certain way of calculating the amount of climbing. The first mountain on the range went up to, say, 2,000 meters, and the next might only be worth three hundred meters, because we went only a little down and

then up again. This was our cult of the mountain.” (Rothenberg 1993, 15) This conversion of experience into something that could be measured and analyzed served him well in his early career, certainly contributing to the level of philosophical rigor that allowed him entry to academia at such a young age. Eventually, however, the distance became more problematic, as he realized that it also separated himself from other people, often against his will. That said, it retained its usefulness: after World War II, Næss served as a sort of mediator, helping surviving families reach some closure about the fate of loved ones who disappeared during the Nazi invasion and its aftermath. This work often involved highly emotional interactions between murderers—or at least their accomplices—and the surviving bereaved, a situation where Næss’ calm affability and emotional distance served him well. Again, though, his belief in humanity rings through: “I belong to those—among which also include certain Christian priests—who cannot judge any human being. We can judge actions, but never the human being. To me, human beings have in a vague sense an infinite value. There is something that calls for respect, even in torturers.” (Rothenberg 1993, 115)

Næss was not a social man, and while he craved human company, he was explicit about not desiring too much of it—his description of perfection was time spent at Tvergastein with a single good companion. But humans remain central to his world: while he struggles explicitly with exactly where and how to draw the boundary, he clearly states on numerous occasions that unique human cultural needs have a superior value to any environmental or animal concern. In the end, nature may function for Næss as the ultimate marker of distance, a mirror that he needed in order, eventually, to see the reflection of

other people across the barren and harsh landscape that he loved. Nature offered him an implacable solitude and a place where the intense rigor of his thoughts could flourish, finding small footholds no matter how barren the soil. The title of Rothenberg's book reflects this process, and is a subject of explicit comment: thought, for Næss is always painful. "Always. Because by thinking, I mean to get further than you have been. That means rethinking with closer attention, going deeper." (Rothenberg 1993, 108)

I suspect that here we have finally arrived at both the point of irreconcilability between Muir and Næss, as well as at an impasse that sheds light onto what these two mountaineers may have to offer each other. There is of course, the obvious: the Spartan nature of Tvergastein would have delighted Muir, and Næss' finely tuned understanding of the costs of the highly-developed social world would, I believe, have been a point of great agreement between the two. But ultimately, Næss is an anthropocentric thinker. Even his initial love of the mountains was, in hindsight, based as much on their addressing a deeply felt psychological need to the point where Næss claims that, when he was five, the mountains were a "kind of a substitute for a good father." When Rothenberg tries to protest that this must be something he "learned later in analysis—a mountain is a substitute for a father," and that this realization may be unfair to the young Næss, "humanizing" the experience in a way that he "might not originally have wanted," he is met with protest: "Yes. But it *was* a kind of protector. It showed me what was worthwhile, suggesting that one should try to be calm and self-contained." (Rothenberg 1993, 17) The pursuit of a healthier, more balanced, more sane relationship with nature for Næss is ultimately a way to find that same equilibrium, that same level of deep engagement, with other human

beings.

Muir, on the other hand, remained committed to nature quite independent of humanity, believing that there was value purely in the mountain, the glacier, the valleys of his beloved California. Nature was not a mirror for Muir, but a tunnel, through which, at certain angles of the sun or during the extremes of certain storms, or under the divine tutelage of certain stars, one could glimpse God at the far side. Still, Muir could certainly have benefitted from some of Næss' rigor, some of his philosophical understanding of the world: at the end of the day, Muir's writings are somehow underwhelming in their overall impact. They are beautiful, surely, and they are inspiring to many. But there is a lack of cohesion, a lack of formality that makes it quite difficult to identify more than a generic "nature is good" program from them. His writing is quoted on web pages and made into slogans on t-shirts, but neither of those would please him. Næss' work, on the other hand, both identifies certain general goals about nature that Muir would fully support *and* identifies some practical ways to align one's life with those goals. Næss' humanism leads him irresistibly into politics, and while neither man was comfortable in that arena (Hetch Hetchy soured Muir on the public arena for the rest of his life, while Næss, when elected to a minor position in his community, made it excruciatingly clear that he was not the man for the job), Næss' recognition of the need for individuals to find their own paths through these questions and his subsequent development both of his own ecosophy but also of a methodology by which he hoped others could generate their own principles for engagement, leave him a much more compelling figure on the practical level.

Both are unified, in the end, by a mystery: for all his soaring prose, Muir can never

quite identify what the magnetic attraction to the earth is for him and for all his considered and careful explorations, Næss can never explain the deep pull of his simple cabin high in the mountains. But for both, there existed a connection, something that moved them to consider their relationship with the deep ground, with the open spaces, with the glaciers and with the desert in a way that illustrates how spiritual practices can be and are centered on the ground that surrounds us.

As Above, So Below

*Perhaps we no longer need to see the Earth in reality when we can see it
so well on Google.*

James Lovelock, *The Vanishing Face of Gaia*

James Lovelock, one of the two key collaborators in the creation of Gaia theory (the other, whom we will meet in more detail below, is Lynn Margulis), describes himself repeatedly as an “independent scientist,” rather than a consultant or an entrepreneur or, more prosaically, an intellectual explorer or something of that ilk. Any of these would be accurate, although entrepreneur may be a bit of a stretch: Lovelock has formed a few different companies, as well as a few non-profits over the course of his career, but the growth or financial success of those enterprises never emerges as a primary concern. Instead he chooses to focus, with enough pride to use it as the subtitle of his 2000 autobiography, on his independence, his working apart from the established scientific community and its entanglements with academic and/or industrial contexts. It’s not an entirely comfortable situation: Lovelock is aware of his isolation from various types of “cutting edge” work and of his missing the give and take of working side by side with other scientists, but his position as an outsider has also served him well: the roots of his work on Gaia may be traced to a moment where his outsider status allowed an unpopular

thesis to be examined more fully than may otherwise have been possible. We will explore the substance of Gaia shortly; before that, a brief sketch of Lovelock's early career will, along with some very quick biographical notes, help set the scene.

Born in 1919 in Letchworth, England, Lovelock's childhood follows a form that, while perhaps not typical, was also not too far beyond the norm: a smart mother who believed deeply in education, a failed enterprise that kept the family on the edge of the economic cliff, a childhood where the greatest lessons were taught outside the confines of the school day and usually learned alone. "I was neither a perfect pupil nor happy to be at school. In fact, I hated it so much that every day was a kind of ordeal. If, as often happened in the winter, the filthy coal smoke that polluted the Brixton air made me ill, it was a vast relief. I could stay at home in bed with my beloved books, freed by bronchitis or pneumonia from the tyranny of school." (Lovelock 2000, 18)

Lovelock's autobiographical writing is refreshingly and at times disturbingly frank. Consider the following recollection from his youth, concerning a prank played on a teacher, seen as representative of the ongoing conflict between students and what we would now term the administration,

one small battle in our long war. A master, who taught French so badly that I could recall hardly a word of it, had the nickname "Sappho." This was not because he was inclined, like others among the staff, to a feeble fumbling of young boys that aimed at, but never reached, its target of pederasty. No, we called him "Sappho" because it was in his hour that pubescent boys explored their bodies in an orgy of mutual masturbation. Much is made of the troubled minds of young girls of those repressed times, of their panic when they reached the menarche and first experienced bleeding from their vaginas. I cannot recall ever having heard any public comment on the similar puzzlement of boys when masturbation produced a sticky liquid product. For most of them, the 1930s were still a time when masturbation was a mortal sin, not something to mention to parents or indeed any adult. It was not so surprising that in the warm community of their peers they explored their bodies and discussed such things. As far as I know, little of this

intimacy led to homosexuality; those of that inclination seemed to pair up early on and avoid the general scrimmage in Sappho's room. (Lovelock 2000, 18)

There is much to unpack here: the common banality of sexual behavior between teachers and young boys, the sense of gender disparity from young Lovelock's perspective, the notion that homosexuality would manifest in a reserved avoidance of the orgy. And, of course, the twin questions of why Lovelock shares this and why I include it. One reason is the simple absence of material like this in other parts of the archives under consideration. For example, Turney's *Lovelock & Gaia*, a very useful guide through the history of Gaia the idea, has little to say about Lovelock, the man. Other than this clear humanizing effect—we are in the company of flesh and blood here, not the distant scientist whose white coat provides a barrier against the outside world—this scene also serves to bookend his autobiography in a thematic sense. Lovelock's final decades (he is ninety-three at the time of writing) have been dominated by three themes: the success of his work on Gaia; a joyous and sexually active relationship with a much younger American woman; and a horrific set of surgical mistakes that literally tore apart the inside of his penis. The relationship is clearly intertwined with the pain and recuperation from the multiple surgeries, and both bear a passing explanation.

In the early 1980s, Lovelock was hospitalized for an urgent operation on his heart. In the post-operative procedure, something went horribly wrong with the removal of his catheter, leading to a long series of excruciatingly painful surgeries and, eventually, a diseased kidney. At one point, by the mid-1980s, this required weekly surgeries on his urethra, where his surgeon

diligently repaired blind holes and other problems caused by the crude dilations with stainless steel rods at Barnstaple. He tidied my urethra to make it again a pipe, rather than something like an inverted river delta, but there was still scar tissue from the damage done earlier. The problem with scar tissue is that it contracts, and I needed relatively frequent operations to keep my urethra open. A less serious side effect was that I now had a curved penis when it was erect. (Lovelock 2000, 364)

This seemed the least of his worries, indeed as an operation was proposed that would, in the words of his doctor, “make a short channel from your bladder to the inguinal region. In other words, to arrange for you an artificial urethra that would be similar in construction to that in most women,” Lovelock decided that, “with the thought that my penis would soon be redundant, celibacy seemed now not to matter quite so much.” (Lovelock 2000, 364) In an oddly unexplained twist, Lovelock wakes from that surgery to find that, instead, his medical team elected to perform a far less invasive urethrotomy, leaving his sexual organs intact and functional. Lovelock writes, “I should have sung my praises to him there and then. Where would I have been in five years’ time with nothing to bring to my second marriage but a withered member?” (Lovelock 2000, 366)

Lovelock met Sandy Orchard in the spring of 1988 at the Global Forum: he was there as a participant, “she shared with Wilfrid Grenville-Grey, of the London office, the task of arranging and running the conference. The New York organizers of the Global Forum, led by Akio Matsumura, Dean Morton, and Cecile Reyes, were in charge.” (Lovelock 2000, 373) It was—complicated by a busy schedule, but not by reticence on either’s part—love at first sight. Before the end of the conference, the two were sharing a bed. Of the first night, Lovelock says, “We talked and nibbled at the cheese and grapes, but not for long. Soon we were in bed for a riotous night. Awake for most of the time, we repeated our lovemaking. ... For the first time in a lifetime, I had fallen deeply in love and

had it requited in full. I knew that this was real—not sex after the seminar for two hungry delegates: it was total commitment and in our hearts and in our genes we knew that it was a perfect marriage.” (Lovelock 2000, 378) At this time, both of them were married to their first spouses, relationships that are described more in terms of long-term caretaking and deep friendship than anything else (Helen Lovelock was in the final stages of a long struggle with multiple sclerosis that would end with her death in 1989, while David Orchard was similarly burdened with a cancer that would take his life the following year). The affair continued unabated: “After a brief and light meal in our suite we went to bed for an orgy of lovemaking that lasted all night. We were so physical that early in the morning, Sandy cricked her back, and pain spoilt what should have been a cosy and slow breakfast.” (Lovelock 2000, 381) Sandy and James married in 1991.

The portrait of Lovelock that emerges from *Homage to Gaia* is that of a forthright, clear-thinking man attempting an honest assessment of an extraordinary career. If, in doing so, he felt the need to push the boundaries of the usual scientific memoir, and if that was partially energized by the wonders of octogenarian sex by one for whom that had once seemed impossible within the confines of his marriage and then again due to surgical invasion, I feel more inclined to indulge the disclosures. They also serve to put him into conversation with the figures of Muir and Næss: the great lacuna of Muir’s life is not his years in Canada, but rather the nature of his relationship with Jeanne Carr, a set of questions unlikely to be resolved given the fierce editing (and burning) of many of their letters shortly after Muir’s death. There is another, more theoretically relevant connection with these two men as well, and one that also bookends Lovelock’s boyhood and dotage.

While in college in Manchester, Lovelock

joined the Mountaineering Club. This student society had a club hut at a place called Tal-y-Braich in the Ogwen valley in North Wales. Thanks to the fact that medical students and young physicians were over-represented in the club, someone nearly always legitimately had a car and could drive to Wales for a weekend of climbing ... I remember one day we left the converted farm cottage at Tal-y-Braich to satisfy an older member's wish to complete his list of Welsh 25s. A 25 is a mountain higher than 2500 feet. There is a curious obsession amongst mountain walkers to climb every mountain that high in some given area. The peak we were making for was Drum, one of the Carneddau—a mountain mass of mostly smooth moss and grass punctuated by small crags, rather like Dartmoor, only higher. ... it was over ten miles to Drum and we passed over Carnedd Dafydd, Carnedd Llewelyn, and two prominent peaks on the way. ... Suddenly, the dangers we faced became real when one of us crested the sharp rise between the mountains and a gust lifted him into the air. He fell in the snow on the slope just beside me and did not fall further. But our leader pressed on like the Bellman in "The Hunting of the Snark." His desire to collect the last of the 25s overcame common sense. ...

I should have known from the fate of other students that it is indeed the most dangerous of activities. Mountains then claimed a high proportion of the lives of those who climbed them and more than ten climbers and hill walkers I knew personally died in the years that I was a student, and mostly from exposure, although a few did fall. ...

We felt so good as we stood on that high mountain range in the snow, gazed down through the clear air, and enjoyed the exhilaration of the endorphins raised by the effort of climbing. Dangerous it may be but few other sports can offer such a reward. (Lovelock 2000, 48–9)

He and Næss would at least have something to talk about, even if Lovelock's mountaineering evolved into a constant series of walks around his long-time residence in England, Coombe Mill. These walks come up at key moments: it was where his friendship with William Golding developed, and it was through them that his heart problems initially manifested. It is also a walk—in direct, if muted in scope, echo of Muir's use of walking as physical therapy—that forms the end of his autobiography. It is ten years on from their marriage, a decade that is remembered in sharp contrast to the 1980s, which Lovelock refers to as "a time of painful self-absorption, whose bounds were limited as if by the

straitjacket of an insect's pupa," (Lovelock 2000, 387). The 1990s, instead, are described as

the most fulfilling years of my life: the sustained joy of my second marriage, recognition by the international scientific community through the award of three major environmental prizes, one literary prize, the Nonino, eight honorary degrees and, most of all, a visit to Buckingham Palace to receive the honour of CBE from the Queen. (Lovelock 2000, 406)

Gazing at an uncertain future and back over the terrain of his past, Lovelock writes of his desires:

As we enter the 21st century, Sandy and I have a sense that we have paid and received our dues. We feel that the rest of our years together should be free of the tasks that we have disliked, but felt the need to do for duty's sake. Prominent among these for me is lecturing and attending meetings and, for us both, answering letters comes next. Instead, we plan to walk the 630-mile path around the southwest coast of England, from Poole in Dorset, via Land's End in Cornwall, to Minehead in Somerset. It involves a total climb of over 91,000 feet, more than three times the height of Mount Everest. This is no epic quest: for mankind it is a pointless and useless endeavor; for us it is a thrilling challenge and a joy to plan. (Lovelock 2000, 407)

Lovelock's early scientific career was a product of what may be termed a "free apprenticeship," where young scientists worked with quite a lot of freedom alongside more experienced researchers. There were financial limits, and there were specific challenges upon which they were directed to focus their efforts, but the picture painted by Lovelock is one where he was given free rein to approach his work in creative, innovative, and potentially risky ways. This self-reliance was partially a product of necessity: Britain during and after World War II was a country struggling to regain its footing in the world, and shortages of everything, from food to scientific equipment, were relatively common. Lovelock thrived under these conditions, combining determination and ingenuity in equal measure and, it would seem, never being discouraged by the logistical and material

obstacles that appeared.

These efforts led to his first and, from a practical perspective, most important invention, the Electron Capture Detector, or ECD. The ECD is a very small device, easily held in one hand. It is also an extraordinarily sensitive one, able to detect the presence of incredibly minute amounts of different chemicals within an easily obtained sample. In *Lovelock & Gaia: Signs of Life*, Jon Turney neatly summarizes the functioning of the ECD:

A small radioactive source is installed inside a tube of nitrogen gas which has electrodes at each end, one positive, one negative, connected to an external circuit. The slight but continuous radioactive bombardment strips electrons from some of the nitrogen atoms, and these free electrons move to the positive electrode—thus generating a steady electric current which can be monitored.

Now introduce a trace of a more chemically reactive gas, say DDT, into the stream of nitrogen. This mops up some of the free electrons, and the current decreases. And it really only does need a trace to produce a detectable effect. A femtogram—a thousand million millionth of a gram—is enough to produce a reading. (Turney 2004, 16–17)

The key is that the fluctuations in current are constant for any particular chemical or compound: each one has a unique signature which the ECD can record. As such, the reading from the ECD can be used to identify very, very small trace amounts of chemicals. Combined with its ease of use and portability, the ECD is also well suited to examining questions related to the dispersion of a chemical or compound over very large distances. It is hard to overstate the impact of the ECD: it was lightweight, cheap, and had application in dozens of disparate scientific fields. Lovelock writes that, “this simple device that fits easily into the palm of my hand was without doubt the midwife to the infant environmental movement. Without it we would not have discovered that chlorinated pesticides like DDT and dieldrin had spread everywhere in the world. ... It made us aware for the first time of

the global extent of pollution. Without the ECD, the appearance of environmentalism and green politics might have been delayed by as much as ten years.” (Lovelock 2000, 191)

Note that the ECD was an invention, not a discovery: Lovelock constructed, refined, and tinkered the first devices into existence, a process that here—as elsewhere in the annals of science—led to what may be seen as an asynchronous process of discovery, where the eventual uses of knowledge may be apparent initially but are not recognized until much further on. Consider:

I had to make everything from the electronic amplifier to the sensor itself by hand. Remember also that in those days we used vacuum tubes not solid-state electronics. I even made the radioactive source needed to ionize the air by scraping the dial paint from gauges taken from the flight deck of old wartime aircraft. These gauges provided a rich harvest of radium. I made the sources by ashing this paint, resuspending the ash in lacquer, and then painting this radioactive lacquer onto the anemometer ion source. It worked well and I was able to take it on my Arctic expedition in the winter of 1949. Its only drawback was that cigarette smoke perturbed its response; it was as sensitive to this as is a reformed smoker. To discover the cause of this disturbance by smoke and perhaps find a cure, I exposed the anemometer to a number of different gases and smokes and found that, in addition to smoke, CFCs disturbed its function. At the time, we did not need a device to detect low levels of halocarbons and so the electron capture detector was, in a sense, prematurely discovered. (Lovelock 2000, 193)

Lovelock remained a committed proponent of hands-on science throughout his career, to the point of holding much theoretical work in more than slight disdain. His passion for science as a physical exercise, as something that contains things you can touch and see and measure, would both plague and pave the way for the later success of Gaia: Lovelock was at the vanguard of those looking for experimental results that would confirm or deny Gaia, and he had absolutely no reticence about the iterative exchange of interpretations that marks scientific process and the seeming reversals of opinion that go along with them. At the same time, it is conceivable that the enormity of Gaia, the difficulty in doing more than

finding evidence for different parts of the phenomenon, remained troublesome for Lovelock himself.

Inferring Life: Entropy and Equilibrium

Life could not exist on a planet sparsely; it could not hang on in a few oases.

James Lovelock, *Ages of Gaia*

This interplay between the theoretical and the practical marks much of his professional career, and was part of the work that laid the foundation for Gaia. The ECD had paved the way for Lovelock's professional career, and had given him access to a wide-ranging network of peers across many disciplines. He had stayed both independently employed and professionally active, and in 1965, Lovelock was approached by NASA to participate, in collaboration with Dian Hitchcock, on work related to the exploration of Mars. Lovelock reminds us that

At that time, and it now seems long ago, it was generally believed that there was a sporting chance of finding life on that planet. In any event, it was felt that the discovery of life anywhere outside the Earth would be a momentous event that would so enlarge our view of the Universe and of ourselves as to be well worth the cost of trying. Hitchcock and I did not disagree with those noble sentiments, but we were concerned that most of the experiments then proposed were much too geocentric to succeed even if there were life on Mars.

If seemed as if the experiments had all been designed to seek the sort of life each investigator was familiar with in his own laboratory. They were seeking Earth-type life on a planet not in the least like Earth. To Dian and me, it seemed that we were guests of an expedition to seek camels on the Greenland icecap or of one to gather the fish that swam among the sand dunes of the Sahara. (Lovelock 1979, 85)

Lovelock and Hitchcock began to frame the problem more broadly, looking to “design a more general form of life-detection experiment, one which would recognize life, whatever its form might be.” (Margulis and Guerrero 1991, 85) This led them to realize that there was, in fact, no need to go to Mars to determine the presence of life. Instead, an analysis of the Martian atmosphere would suffice, and such measurements could be done safely from the surface of the earth:

If a living cell is exchanging chemicals with the outside world, there must be a means of moving the chemicals around, removing wastes and bringing nutrients within reach. The only two ways of doing this, the only media for transport and exchange, are air or water. As it looked like there was no liquid water left on Mars, what passes for air on the planet was the only thing left for life to use. (Turney 2004, 9–10)

Here’s the key: earth’s atmosphere is radically, maniacally unstable. There are thousands of different chemical exchanges happening all the time. All of this activity serves, in general, to increase order in local systems: that is, it works against the Second Law of Thermodynamics, which decrees that systems tend towards entropy, towards a maximum dispersal of energy. There is a tendency to talk about the Second Law of Thermodynamics as stating that the universe tends towards disorder or chaos. This is a technically correct, but often gross misunderstanding of Rudolf Clausius’ famous statement in 1865 that “the entropy of the universe tends to a maximum.” Entropy does indeed equate with disorder—at the microscopic level, where increased entropy refer to the increased number of possible states that are available to the system; that is to the greater range of unpredictable outcomes. The most common example of this involves a thought experiment where something like the following is proposed: take two sets of a dozen tennis balls, twelve red and twelve white and enclose them in a three foot square cube. Shake the

cube for long enough to ensure random distribution of the balls and then freeze them mid-shake. How will the balls be arranged? The answer, of course, is impossible to pin down exactly, but the odds of an incredibly highly ordered outcome—say all of the red balls lined neatly against one side of the cube and all of the white ones against the other—are infinitely worse than a highly disordered outcome, where the arrangement of white and red balls seems to follow no discernible pattern at all. A similar thought experiment would be to throw small blocks with the letters of the alphabet in the air and have them land in such a way that they spell something meaningful. The difficulty is that the system at the height of disorder may, in fact, appear the most well blended at the macroscopic level (think of, say, a blueberry, banana, and strawberry smoothie: after a few minutes in the blender, we are likely to see a uniform color emerge instead of stripes or polka dots or identifiable swirls of blue, yellow, and red). Erik Davis observes that “the second law does seem to condemn all the interesting things in the universe to tread water for a while before they get sucked downstream into a cold amorphous sea of bland disorder. More than any other force in physics, entropy strikes the mind like some dark and ancient doom etched into natural law.” (Davis 1998, 104) This perceptive difficulty has led, over the past few decades, to the term disorder falling out of favor in deference to the more accurate—but admittedly less compelling—“energy dispersion.”

When thought of this way, the constant processes of chemical exchange that fill the atmosphere are clearly working against the dispersion of energy. And, the source of all this dynamism? Life. It is the presence of life on Earth that results in the atmosphere being in a constant state of flux; conversely, closed systems absent of life result in a dead state: a

neutral equilibrium that remains undisturbed. The Second Law of Thermodynamics always wins; but the absence of life allows the process to speed up considerably.

Were there no life, temperature and gas composition would be predictable solely from physical factors. The sun's output of energy and the rules of chemistry and physics would determine Earth's surface properties. But these properties deviate significantly from predictions based on physics and chemistry alone. The non-biological sciences do not suffice to explain the Earth's surface environment. (Margulis 1998, 124)

This is a critical moment, and one that resonates deeply outside the scientific community as well. Consider Bataille: "I insist on the fact that there is generally no growth but only a luxurious squandering of energy in every form! The history of life on earth is mainly the effect of a wild exuberance; the dominant event is the development of luxury, the production of increasingly burdensome forms of life." (Bataille 1989, 33)

It is a simple thesis, one that ultimately led Lovelock to the formulation of Gaia many years after his efforts to identify traces of life on Mars. When he proposed it to NASA, however, the notion that he could prove the existence of life on Mars from the safety of a laboratory in England was greeted with some horror: such an idea, no matter how correct, was politically imprudent given the years of manpower and money that had already been committed to the exploration of Mars, especially since the only provable result from Lovelock and Hitchcock's work was the affirmation that, indeed, life existed on our own planet—which does not, as you would imagine, make for good headlines.

Lovelock recalls that

This was not welcome news to our sponsor, the National Aeronautics and Space Administration. They badly needed reasons to go to Mars, and what better than to find life there? Much worse, it was hardly good publicity for NASA to claim that work they had funded proved that there was life on Earth. It would have been a gift

to Senator Proxmire, and I was not surprised to find myself soon unemployed.
(Margulis and Guerrero 1991, 87)

“It might make sense to send a spacecraft all the way to Mars to scoop soil samples. However, the subtleties of chemical spectroscopy meant that the composition of the atmosphere could be worked out using earthbound telescopes.” (Turney 2004, 10)

Lovelock’s participation on the project was limited to the creation of some instrumentation, even though his ideas about the existence of life proved correct.

From this beginning, Lovelock, working closely with American biologist Lynn Margulis, explored some of the questions that followed from his experiences with NASA. Margulis has as fascinating a biography as Lovelock: she was married to the eminently well-known astrophysicist Carl Sagan at a young age, went through what is hinted at as an extremely difficult separation and eventual divorce from him, on which Turney notes with a level of understatement that is found in most descriptions of their relationship that, “while Sagan may have been forward-looking in science, his views about a woman’s duty to support her husband’s career did not chime with Margulis’ ideas of what she wanted to do in life.” (Turney 2004, 23) Then, in both a rough parallel to Lovelock’s own career and in an echo of their collaborative work itself, Margulis would pursue her research into the symbiotic nature of biological and bacterial relationships to what turned out to be a major reformulation of one part of evolutionary biology that was initially ridiculed and later accepted as orthodoxy. “Clever, combative, well-informed, and deeply committed to a controversial change in ideas, Margulis was an ideal tactical as well as intellectual sounding board for the equally radically-minded but retiring and conflict-hating Lovelock.” (Turney 2004, 25) The professional partnership between Lovelock and

Margulis spanned more than forty years, and while both write with the utmost affection and respect for each other, they also each acknowledge that the professional nature of their relationship is part of what allowed it to flourish for such a long time. Margulis has turned out to be the more prolific writer, writing (usually in partnership with her son, Dorion Sagan) about evolutionary biology, sex, and what it means to “do science.”

At first, however, Margulis and Lovelock were pondering several atmospheric puzzles with an intuition they could be interrelated: for example, we know that, over long stretches of time (thousands of millions of years), the amount of heat that reaches the earth from the sun has been variable in a range far greater than that of the ambient temperature. That is, temperatures have varied only within a roughly ten degree Celsius span (eighteen degrees Fahrenheit) but the output of the sun has varied much more dramatically in that time, to the point where, “if our planetary temperature depended only on the abiological constraints set by the sun’s output and the heat balance of the Earth’s atmosphere and surface, then the conditions of either the upper or lower extremes ... could have been reached.” (Lovelock 1979, 20) The limits Lovelock refers to here are either all water on the planet dissipating into steam or all freezing into ice: in either case—in any situation that even *remotely approaches* either case—all life would be eliminated. Another: the amount of oxygen in the atmosphere has, over spectacularly long periods of time, remained strikingly constant at around twenty-one percent. We know this because if the level of oxygen drops too low not only does life suffer, but fire—which is, in various forms, a constant in the earth’s history—becomes impossible to sustain; just a few percentage points higher in concentration, though, and any spark would turn into a roaring

conflagration that would never be extinguished. Between these points is a margin of error of roughly ten percent: “if it dropped to below 15 percent, *nothing* would burn. Organisms could not breathe and would asphyxiate. If the oxygen in the air rose to above 25 percent, *everything* would burn. Combustion would occur spontaneously and fires would rage around the planet.” (Capra 1996, 241–2) A third, that both brings Lynn Margulis’ voice into the conversation and stresses the role played by other biological entities and foreshadows the complex kinds of regulatory interaction that would become the hallmark of her and Lovelock’s later work, both independently and collaboratively, begins with the recognition that, “our atmosphere contains far too much oxygen in the presence of methane. These gases, highly reactive when mixed, could not coexist at such high concentrations unless the levels were being actively maintained.” (Margulis 1998, 115)

Recalling one of her initial communications with Lovelock, Margulis continues:

Why is this gas, which reacts so strongly with oxygen, always measurably present in Earth’s atmosphere? It should disappear. Suspecting life from the beginning, he asked whether I knew what could possibly produce this gas. I responded the way anyone who reads microbiology would. Methane gas is produced by bacteria, mainly the methanogens that live in waterlogged soil or in cattle rumen. The metabolic product of methanogenic bacteria is released in copious quantities not in cow flatulence (as I always thought) but in their belches. Methane is released into the air through the mouths of calves, bulls, and cows. Atmospheric methane quickly reacts with oxygen to produce carbon dioxide. Clearly air methane is replenished on a regular basis because it is always present at concentrations from two to seven parts per million. (Margulis 1998, 117)

What could account for these conditions? Here is where Lovelock’s background in engineering and his lifelong attraction to tinkering comes into play. He was well conversant with the notions of self-regulation and feedback loops, mechanisms by which mechanical systems are able to maintain stable states despite a varied level of inputs. That sounds more complex than it is: the question being considered here is why doesn’t your car

overheat as the engine runs hotter and hotter or how does your oven know when to turn on and off to maintain a temperature of 400 degrees Fahrenheit? Feedback loops are the answer to both these questions. There is a device under the hood that has an opening controlling the flow of coolant around the engine and to the radiator. As the engine heats up, the opening expands, allowing more coolant to flow; as the engine cools, the opening shrinks, restricting that same flow. The notion of a radiator is worth keeping in mind as well: the radiator is a heat sink, used to transfer heat that is generated within solid materials (the engine itself) to fluid mediums (air or liquids), where it can then be dispersed more efficiently. A similar process is at work in a gas oven, where a diaphragm that expands or contracts in response to the internal temperature of the oven controls the flow of gas. When you set the desired temperature, a limit is set on that expansion; as the oven heats up, less gas is allowed through the diaphragm, as the temperature drops, more gas is allowed through, causing the temperature to rise once again.

Both of these examples are properly referred to as homeostatic, meaning they regulate a certain condition—called a *set point*—around a pre-determined state: in both of these cases, a certain desired temperature or temperature range. “If the set point itself is not constant but changes with time, it is called an operating point. Systems with operating points rather than set points are said to be homeorrhetic rather than homeostatic. Gaian regulatory systems, such as the embryological ones, are more properly described as homeorrhetic rather than homeostatic.” (Margulis and Sagan 2007, 176)

There is something of a spectrum here, with tightly coupled examples of self-regulation at one end and what might be termed complex cyclical systems at the other. The

hydrologic cycle—more commonly referred to as the water cycle—is an example of the latter. Here, in the simplest view, water is transformed between its various possible states by geologic and atmospheric forces: starting with its existence in oceans, seas, and smaller bodies of water, heat from the sun causes it to evaporate into water vapor which is carried into the atmosphere. As it rises, the vapor cools, causing condensation and the formation of clouds, which move around the atmosphere and then return to Earth as precipitation. There are, of course, additional details: some precipitation adds to ice caps or glaciers which return to the sea much more slowly; some precipitation is soaked into the ground as infiltration, which replenishes long-standing aquifers. But, eventually, the cycle of water to evaporation to precipitation holds, and the total amount of water—counting all three states—remains fairly constant over an extended time (remember, geologic time: it remains absolutely stable in times that we can easily comprehend, and only varies slightly over millennia).

There is nothing *regulatory* here: the process happens mechanically, automatically, without any adjustment to input or output that maintains something else in the process as a constant. The amount of water on earth stays constant, not because of regulation, but because when two atoms of hydrogen bond with an atom of oxygen, they turn out to be remarkably difficult to destroy: they willingly change form as a reaction to temperature and pressure, but getting rid of the molecule altogether proves difficult to the point of statistical insignificance. This actually hints at another one of the narrow tolerances: hydrogen atoms are able to escape the atmosphere, especially on planets with (compared to Earth) low gravitational forces. Essentially, the lighter molecules, as they drift upwards

into the atmosphere, may be subject to any one of a number of mechanisms whereby their velocity exceeds what is required to escape the planet's gravitational pull: this is one of the accepted theories as to how both Venus and Mars lost their water reserves.

It is important to reexamine some common perceptions, at least among those of us who do not have a natural inclination towards chemistry and the ubiquitous nature of chemical exchange, before proceeding. The atmosphere—which we routinely perceive as empty space, as a void through which we gaze at distant objects—is riotously, vibrantly active; a constantly chaotic series of chemical reactions are occurring all around us, usually without any visible impact (although the olfactory presence of sulfur pools is often quite strong). As Sagan writes,

Certain elements are planetary lifeblood. Like blood, they flow through the biosphere in limited supply. The carbon, sulfur, nitrogen, phosphorus, oxygen, and hydrogen that make up all organisms on Earth are not infinite. They must be continually redistributed, or cycled. Unlike an animal, Earth has no heart pushing this global flow in a simple beat. Instead, the planet lives on a complex of different forces all pulsing to a syncopated rhythm. These forces include wind, daily sunlight and darkness, ocean currents and tides, the erosion and surges of volcanoes and mountain building, the separation and collision of continents, and the incessant motions of living beings. (Margulis and Sagan 2007, 185)

Mind the Gap: Filling In the Sulfur Cycle

The difficulty with these cycles is that, the closer they were examined, the more likely certain shortfalls were exposed. Perhaps the most important of these in Lovelock's early career was "the sulfur gap." Sulfur "is found in the proteins of all organisms and is therefore required for all growth. The element exists in both hydrogen-rich forms and in

highly oxidized forms. Chemical reactions, from oxidized to hydrogen-rich compounds and vice versa, yield energy.” (Margulis and Sagan 2007, 186) The sulfur cycle describes how the chemical is recycled through a series of bio-chemical exchanges, vaguely akin structurally to the hydrologic cycle described above, or to the carbon cycle, or to any one of the ways other substances are created, dispersed, and moved around in, on, and above the earth. As more and more precise measurements of this cycle were made, questions began to emerge. “Measurements of the weathering of sulphur-bearing rocks, sulphur taken up by plants, and of gaseous sulphur compounds dumped into the atmosphere by burning coal and oil seemed to add up to less sulphur in total than was being carried down to the sea by the action of rivers. Some unknown carrier must be transporting sulphur dissolved in the ocean back to land. But what?” (Turney 2004, 60)

Some contributors were well known: bacterial and microbial contributions to the sulfur cycle are well understood, including their role in the creation of pyrite (more commonly known as “fool’s gold”), which provides a lovely metaphor for our purposes. The illusion here, the false gold, is the search for a purely mechanical process to explain the chemical cycles, a simple and linear chain of reactions where a set input condition results invariably in a predictable set of outputs. By re-examining our notion of the status of bacteria and microbes—a topic we will look at more closely below when we dive more deeply into Margulis’ work—we arrive at a very different picture. If the presence of sulfur in “mineral deposits depend on and, in a real sense, are part of life, then why are they considered static, inanimate, and nonliving?” (Margulis and Sagan 2007, 187) Lovelock proposed that the key to understanding the flow of sulfur was a compound, dimethyl

sulphide (DMS) which at the time was not thought to exist in enough quantity to serve this purpose. In 1971, he applied “for a small grant to measure dimethyl sulphide, methyl iodide, and the CFCs aboard the research ship, *Shackleton*, which was due to make its voyage to Antarctica and back later the same year.” (Lovelock 2000, 206) Lovelock writes that his application

was rejected unanimously. Not only this, but appended to the report was the complaint that bogus proposals such as mine should not in future be presented to the committee, it wasted their time. Their annoyance stemmed from the fact that the senior chemist of the committee was sure that no one could measure the chlorofluorocarbons at parts-per-trillion levels, as I had claimed I could do. He said the CFCs are among the most inert chemical compounds known and it would be difficult to measure their abundance in the atmosphere at the parts-per-million level; it was impossible to measure them at the parts-per-trillion level and therefore the proposal was bogus. Now this was a profoundly ignorant statement and could only have come from a narrow specialist, unaware of the advances in other branches of chemistry. (Lovelock 2000, 206–7)

I quote this passage partially for detail but partially, of course, for the explicit swipe at scientists whose vision is tightly bound by a single sub-discipline, something Lovelock sees as a profoundly distressing impact of the growing corporate institutionalization of scientific fields of inquiry.

Others who saw the proposal were more open, and the Natural Environment Research Council (NERC) offered Lovelock a berth on the *Shackleton* and passage back from Uruguay (one of the ports of call on its itinerary towards Antarctica).

As far as the expedition was concerned, I would have to supply the equipment and any personnel other than myself. Because the academic committee rejected my proposal, NERC could only offer this limited support. I was delighted: I could easily afford to make a simple gas chromatograph for the voyage. I would travel and do the measurement at least as far as Montevideo myself; I could afford that much time. (Lovelock 2000, 206)

Lovelock’s initial attempts to gather samples aboard the *RV Shackleton* are worth

recounting for their quaint—and decidedly British-themed—ingenuity, the continued range of receptivity displayed by other scientists, as well as for their insights about just how sensitive his devices were:

By mid-morning it was time to take the first water samples. A research ship like the *Shackleton* has a pump to draw in fresh seawater from the bows so that the scientists aboard have a continuous sample of the sea the ship passes through. My first sample of this water was so laden with chlorine and sulphur compounds that it overloaded the chromatograph and I could make no analysis. I was sure that these substances were not in the sea itself but were contaminants coming from the pump or the pipes through which the water flowed. I could see no way to get a truly clean water sample from this source, so I tried collecting sea water by tying a small bucket to a rope and dropping it over the side of the ship. This was foolish, for the fierce pull of the rope nearly dragged me overboard, and I should have calculated that a bucket dropped into water flowing past at 14 mph exerts a pull of over 100 pounds. Contritely, I asked the ship's technician if he had a smaller vessel I could use. Lab vessels such as beakers were much too fragile; saucepans too difficult to manoeuvre on our rope. Then suddenly we wondered whether we could use a teapot? Sure enough, the galley had an old aluminum teapot now retired from use. This was tied to our rope, and everything was easy from then on. Every day we lowered it into the sea and used it as a source of surface water samples.

The sight of our teapot samplings stirred the serious-minded company of scientists; some were derisive of such low technology, others were appalled. One of them, who was not experimenting until the ship reached Antarctica, said to me, "You know, the ship has proper Nansen bottles for water sampling and I'm sure the captain will stop to let you sample down to lower depths." Captain Shelby Smith was more than willing to do this, and at frequent intervals we stopped to lower the ships' bottles by cables down to depths as low as several hundred metres. Again, I was frustrated in my measurements, this time by the rubber closures of these bottles. The rubber absorbed and later released any volatile chemicals in the air around it. This memory of past atmospheres contaminated the water samples from these Nansen bottles. We tried several tricks. Taking the rubber and boiling it in water for hours helped, so did leaving the bottles exposed open to the sun and air on deck before use. In the end, we used bottles without the rubber closures. They leaked, but not enough to prevent them serving my needs. Up until this voyage, marine scientists has been interested only in the inorganic constituents of seawater—things like salt, acidity, and other minerals. The rubber-sealed Nansen bottles were fine for this need. No one had anticipated the need to collect volatile organic vapours like the CFCs and DMS, and so they never designed bottles for this purpose. (Lovelock 2000, 211–2)

Lovelock's work on the *RV Shackleton* was key in his career: it catapulted him into what became known as "the Ozone Wars," it provided more data than he could plow through in

many years, and it proved the field-worthiness of the ECD under a range of conditions.

It also provided the information necessary to crack open a solution to the original question regarding the quantity of sulfur: it turns out that DMS is far more prevalent than believed possible and the source of it were various “marine algae which stick methyl groups (CH₃) onto sulphur, perhaps as a means of getting rid of an unwanted chemical by turning it into something more volatile.” (Turney 2004, 60) That is, the algae dispose of sulfur by turning it into DMS and shedding it, in a quantity which could, theoretically at least, “balance the books” of the sulfur cycle.

Suddenly, however, we have changed our position on the spectrum mentioned above: no longer are we discussing a purely mechanical process, now, somehow, *life* is engaged and involved in the regulation of sulfur. This is a watershed moment, requiring a sea change in thought for full comprehension: we know that too much or too little sulfur on the planet could be at worst deadly and at best detrimental to the continued existence of life. And here we find life—in the form of marine seaweed—participating in the process by which the total amount of sulfur is regulated. The sticking point is the same as the old saw about the thermos being the greatest technological invention of all time because it keeps cold drinks cold in the winter and hot drinks hot in the summer: *How do it know?* Without assigning any form of sentience to the Earth, how do marine plants add more or less sulfur into the oceans and lakes of the world as needed to maintain the sulfur cycle?

Hypothetical Daisies

New technologies of perception and communication open up new spaces, and these spaces are always mapped, on one level or another, through the imagination.

Erik Davis, *TechGnosis*

The question proved entirely intractable, demanding either the interference of a coordinating intelligence or a level of knowledge of the interaction of complex systems that continues to elude us entirely. Lovelock's response was to re-examine the problem from the other end, resulting in a context that Turney sums up like this:

The evolution of life was an ever-branching tree, not a targeted affair. So Gaia's apparent regulation of environmental conditions did not stem from some overall imperative, a goal-seeking property of the whole system. To be allowed into the scientific mainstream, Gaian effects had to be explained non-teleologically: they had to emerge from the properties of lower-level parts of the whole, preferably ones which were compatible with natural selection. (Turney 2004, 85)

This led to "a thought experiment which quickly became a simple computer model, then a continuing line of research lasting for the next twenty years," (Turney 2004, 85) the focus of which was, perhaps surprisingly, daisies. Or, hypothetical daisies. Here's how it started: imagine a planet roughly akin to Earth, where the only species present was a daisy that exists in two varieties, light and dark, and grows best in temperate conditions. In the initial generation, half the daisies were light and half were dark. The question is this: how will variable heat over time impact the population of daisies, given that the dark colored daisies will soak up heat while the light colored ones will reflect it? Lovelock's goal was to mirror the long history of our sun, whose heat has been increasing over the millennia.

Out of this was born *Daisyworld*, a computer program that simulated these, and

many other, conditions. The initial runs of Daisyworld were spectacularly encouraging: at first, with a cooler planet, the darker daisies grew better, especially around the equator. As populations increase, the darker plants absorb and trap more heat, increasing local temperatures ever so slightly. Eventually, the dark plants colonize the entire planet while also raising its temperature above what it would be without any life on its surface. Over time, this allows the light colored daisies to make a comeback and, as the heat input from the star increases, they eventually survive in greater numbers than the dark ones; as this happens, less heat is trapped at the planet's surface, and global temperatures are cooled ever so slightly. Until, of course, the heat output of the star overpowers the system entirely: the regulatory system is overloaded, the daisies all die off, and the planet is left with ever increasing temperatures and no life whatsoever.

In visual terms, we would expect planetary temperatures to increase along a relatively stable slope (at least in the initial models); however Daisyworld results in a classic stair step, where temperatures increase steeply at first (as the dark daisies dominate), then hold steady for a significantly long period of time (while the mixture of light and dark daisies interact), before again steeply increasing (when it becomes too hot for the light colored daisies). Note the final stage: the daisies are totally incapable of altering the long view: the planet still starts relatively cool and still burns to a crisp in the end. Daisyworld contains a message about limits, about the constraints within which it is possible to impact change.

Perhaps the strangest knowledge to come from our quest for Gaia has been the realization that, robust though she may be, the conditions of our Earth are moving close to the point where life itself may not be far from its end. The quite unstoppable increase of the sun's heat soon will be beyond the capacity of

regulation or adaptation. In human terms the Earth is still forever inhabitable. But in Gaian terms, if the length of life on Earth were one year, we are now in the last week of December. (Margulis and Guerrero 1991, 96–7)

The rightful area of focus (and, as Lovelock points out, the death of the sun will happen long, long after humans have disappeared from the planet) is the long, fairly horizontal bar in the middle, where surface temperatures are kept within a fairly narrow range far longer than they would be without some modification of the energy output from the star.

Computer models are pretty easy to attack, and Daisyworld proved no exception: critics insisted it was “rigged” to produce the results Lovelock desired or that since it was so simplistic it had no relationship to any actual planet, let alone the one we inhabited. The former argument was difficult to refute, but was ultimately ignored (remember, this was in early 1980s, long before a notion of “open source” was in vogue—nowadays, you can download dozens of versions of Daisyworld, verify their programmatic assumptions and techniques, and modify them as much as desired). The latter argument is what led to the decades of further work with the model, which resulted in some unexpected and potentially startling knowledge: in general, the more complexity that is introduced to Daisyworld, the *better* it is able to regulate the environment. Fritjof Capra, with whom we will deal in depth shortly, summarized the spiraling complexity of work on Daisyworld by listing out how far the model had come, where,

Instead of just two, there are many species of daisies with varying pigments in the new models; there are models in which the daisies evolve and change color; models in which rabbits eat the daisies and foxes eat the rabbits; and so on. The net result of these highly complex models is that the small temperature fluctuations that were present in the original Daisyworld model have flattened out, and self-regulation becomes more and more stable as the model’s complexity increases. In addition, Lovelock put catastrophes into his models, which wipe out 30 percent of the daisies at regular intervals. He found that Daisyworld’s self-regulation is remarkably resilient under these severe disturbances. (Capra 1996, 110)

Additionally, Daisyworld has acquired dozens of additional bio-chemical processes, rudimentary weather patterns, the existence of clouds to block the sun's rays before they ever reach the daisies, and stars with variable heat outputs that change over time. And Capra's key sentence remains true: *The net result of these highly complex models is that the small temperature fluctuations that were present in the original Daisyworld model have flattened out, and self-regulation becomes more and more stable as the model's complexity increases.* This is a remarkable and important point whose implications range far beyond the present topic: we tend to believe that simple models are the most stable and that the addition of complexity is equivalent to introducing chaos, unpredictability, and instability into our thought. Daisyworld has survived all this additional complexity almost completely unscathed, continuing to illustrate that local adaptations, working consistently with well-known genetic principles can indeed contribute to systemic self-regulation.

Lovelock theorized that, in addition to the mechanical cycles, many of which were well known and well documented, a regulatory mechanism akin to Daisyworld was at work with regards to the Earth itself. And, edging towards half a century on, he was clearly correct: there are in fact *dozens* of such self-regulating systems at work simultaneously, some working in concert, some independently, all of which combine to preserve a certain band of narrow tolerances on the planet that support the continued existence of life.

"Daisyworld ... shows how self-regulation could be a property of a planetary system and result from the tight coupling of biological and physical evolution. Daisyworld also provides a tractable working model of the phenomenon of emergence, and is an illustration of that wonderful state when the whole is more than the sum of its parts." (Lovelock 2000,

265)

This should have been a relatively straightforward moment for science: a new hypothesis is suggested; experimental results, while providing enough friction to further refine its claims, serve largely to confirm it; and eventually the hypothesis moves from the realm of theory to the realm of fact. Along the way, though, something remarkable happened, something that reveals the topology at the center of our explorations in this thesis as a whole.

I have tried, in this initial summary, to avoid the language of intent. Doing so has been difficult and has created some exceedingly awkward formulations in the writing. But doing so has also avoided the largest issue that emerged around Lovelock's claims, that of a projection of intentionality behind these systems. There is no sentience—in any way that we recognize—behind your engine or your oven, yet we easily and without remark use language like *the engine overheated*, or *the oven is acting up again*. These phrases roll by without notice as a shorthand for a mechanical process that may or may not be fully understood at the time. Language about complex cycles proves slightly more troubling: the question *who makes it rain?* is one that has a variety of answers in different contexts, but there is a general acceptance in scientific circles that rain just *happens*. That is, rain is not intended, it is not a result of desire nor is drought the result of human misbehavior; instead it is part of the hydrological flow, and something that, while doggedly unpredictable the more local one's focus (recall the discussion of weather in the previous chapter), is absolutely reliably predictable at the most macro of scales. That is, water *will* evaporate, and it *will* form clouds and those clouds *will* result in precipitation. Somewhere. Sometime.

All Hail the Queen: Gaia's Grand Entrance and the Evolutionary Response

Selfish-genery now colours large areas of our intellectual landscape and it is likely to go on doing so until some other invading myth displaces it.

Mary Midgley, *Evolution As A Religion*

But self-regulating natural systems open up an entirely different challenge for language and for our perceptions. Questions about how the target output state is chosen, why that particular state instead of another, how the inputs are set in motion; these plague us. This is why Daisyworld was (and remains) so important:

The radical insight delivered by Daisyworld is that global homeorrhesis is in principle possible without the introduction of any but well-known tenets of biology. The Gaian system does not have to plan in advance or be foresighted in any way in order to show homeorrhetic tendencies. *A biological system acting cybernetically gives the impression of teleology. If only the results and not the feedback processes were stated, it would look as if the organisms had conspired to ensure their own survival.* (Margulis and Sagan 2007, 177)

Certainly, Lovelock did himself no favors in naming his theory as well. Gaia's naming is a tale repeated so often it has a slightly apocryphal tone to it, but the general facts remain stable through the retellings. We'll use a version from Lynn Margulis:

The term *Gaia* was suggested to Lovelock by the novelist William Golding, author of *Lord of the Flies*. In the early 1970s, they both lived in Bowerchalke, Wiltshire, England. Lovelock asked his neighbor whether he could replace the cumbersome phrase "a cybernetic system with homeostatic tendencies as detected by chemical anomalies in the Earth's atmosphere" with a term meaning "Earth." "I need a good four-letter word," he said. On walks around the countryside in that gorgeous part of southern England near the chalk downs, Golding suggested Gaia. The ancient Greek work for "Mother Earth," *Gaia* provides an etymological root of many scientific terms, such as *geology*, *geometry*, and *Pangaea* [emphasis sic]. (Margulis 1998, 118)

Lovelock acquiesced, and while early in Gaia's life he expressed some reservations about the name, by the time the current millennium rolled around, he had embraced it fully, although both he and Margulis recognized the impact of the choice. Writing just before the turn of the century, Margulis notes that,

Many scientists are still hostile to Gaia, both the word and the idea, perhaps because it is so resonant with anti-science and anti-intellectual folks. In popular culture, insofar as the term is at all familiar, it refers to the notion of Mother Earth as a single organism. Gaia, a living goddess beyond human knowledge, will supposedly punish or reward us for our environmental insults or blessings to her body. I regret this personification. (Margulis 1998, 118)

This was too much for the scientific community on the whole: the notion that feedback systems existed that impacted the Earth? Sure, of course. But the notion that they were somehow constructed *with a purpose*, with a teleology that focused on the conditions necessary for life? That raised, at the least, questions of sacrality, of a higher purpose, of exactly who set the billiard balls in motion originally. On top of that, to have to refer to theory by the name of an ancient Greek goddess, further muddying the waters with a notion that the process was controlled by, not only a deity, but a female one? Preposterous and unacceptable. While some of the protest was overwrought, there were genuine concerns at work. Consider this passage from David Spangler, a leading figure in the New Age (about which much more anon):

For example, the image of Gaia as the spirit of the living Earth embodies much of what I mean when I talk about the new Age. Gaia for me means more than just ecology or environmental concerns, and more than just a sense of the Earth as a living being. It means an evolving system in which individuality, diversity, complexity, connections, wholeness, and emergence all come together in a condition and consciousness of synergy and co-creativity. To me, Gaia means the challenge to learn to think and act the way the spirit of the planet does—in a manner that empowers and sustains life and its unfoldment. (Spangler 1991, 48)

This language—perhaps compelling, perhaps insightful—is certainly not scientific and

reflects the complexities of the chasm between the reception of science and science itself.

Lovelock's sometimes soaring descriptions of Gaia show in stark contrast to Margulis' concise summary of the theory, where it is reduced to a claim that "aspects of the atmospheric gases and surface rocks and water are regulated by the growth, death, metabolism, and other activities of living organisms." (Margulis 1998, 2) Such a formulation would probably have raised few eyebrows. Instead, Lovelock was, for the most part, torn to pieces by the scientific community in general. The criticism, however, spilled well beyond a dispute of the science behind his ideas: he was vilified for his choice of name, for his insistence on metaphor, for the sniff of intentionality that he gave to the earth.

Biologists have attacked the name Gaia and the metaphor of a living Earth as if I intended them as fact. I now think they did this from an instinctive dislike of holistic ideas, not because they were greedy over metaphors. I never begrudged them "The Selfish Gene," "The Red Queen," or the [sic] "The Blind Watchmaker." Nor do I pedantically argue that to be selfish a gene would have to take thought and have purpose. Their attack on the metaphor of Gaia, the living Earth, was not a proper scientific criticism: it was a gut reaction to an unwelcome theory. Not all biologists were hostile. (Lovelock 2000, 256)

Perhaps not, but many were; indeed, perhaps the harshest response to Lovelock's initial claims came from evolutionary biologists, led by the overwhelming presence of Richard Dawkins (who, at that time, was at the height of his intellectual power and influence). Dawkins' most cited critique of Gaia is both compelling and misguided, a dangerous combination for Lovelock's argument. Initially, Dawkins both identifies his common ground with Lovelock and neatly performs a slippage that contains almost all of their disagreements when he writes that "Lovelock rightly regards homeostatic self-regulation as one of the characteristic activities of living organisms, and this leads him to

the daring hypothesis that the whole Earth is *equivalent* to a single living organism.” He goes on, with strong notes of incredulity to insist that, “He really means it.” (Dawkins 1982, 235)

One of, equivalent, really means. We are dealing with fuzzy concepts more proper to linguistics than biology, and doing so allows Dawkins to set up a series of powerful straw men that he neatly tumbles down:

The fatal flaw of Lovelock’s hypothesis would have instantly occurred to him if he had wondered about the level of natural selection process which would be required in order to produce the Earth’s supposed adaptations. Homeostatic adaptations in individual bodies evolve because individuals with improved homeostatic apparatus pass on their genes more effectively than individuals with inferior homeostatic apparatuses. For the analogy to apply strictly, there would have to have been a set of rival Gaias, presumably on different planets. Biospheres which did not develop efficient homeostatic regulation of their planetary atmospheres tended to go extinct. The Universe would have to be full of dead planets whose homeostatic regulation systems had failed, with, dotted around, a handful of successful, well-regulated planets of which Earth is one. Even this improbable scenario is not sufficient to lead to the kind of evolution of planetary adaptations of the kind Lovelock proposes. In addition we would have to postulate some kind of reproduction whereby successful planets spawned copies of their life forms on new planets. (Dawkins 1982, 235–6)

Fascinatingly, Dawkins recognizes what he is doing. He follows this paragraph with

I am not, of course, suggesting that Lovelock believes it happened like that. He would surely consider the idea of interplanetary selection as ludicrous as I do. Obviously he simply did not see his hypothesis as entailing the hidden assumptions that I think it entails. He might dispute that it does entail those assumptions, and maintain that Gaia could evolve her global adaptations by the ordinary process of Darwinian selection acting within the one planet. I very much doubt that a model of such a selection process could be made to work. (Dawkins 1982, 236)

And, further on, “I do not deny that somebody may, one day, produce a workable model of the evolution of Gaia ..., although I personally doubt it.” Dawkins moves immediately into a full dismissal of Lovelock’s project, calling it “an extreme form of what, for old times’ sake although it is now rather unfair, I shall continue to call the ‘BBC Theorem.’”

(Dawkins 1982, 236) Note that Dawkins' belief is that he is now being unfair to the BBC, not to Lovelock. Dawkins' "BBC Theorem" is actually of significant interest to us, as it represents an awareness of one of the phenomenon we are exploring: if you read beyond the obvious sneer in his tone, he is describing a movement towards an almost religious holism in how we use science to perceive nature:

For years the dominant message of these commentaries was one that had been elevated almost to the status of a religion by pop 'ecology'. There was something called the 'balance of nature', an exquisitely fashioned machine in which plants, herbivores, carnivores, parasites, and scavengers each played their appointed role for the good of all. ... The BBC Theorem is often expressed in terms of the poetry of webs and networks. The whole world is a fine-meshed network of interrelationships, a web of connections which it has taken thousands of years to build up. (Dawkins 1982, 236-7)

So, one of the two preeminent spokesmen for evolutionary biology of the day (the other being Dawkins' major foil in popular discussions of evolutionary biology, Stephen Jay Gould) has slipped his true position, that of being not yet convinced of Gaia, between two moments of intense ridicule, one an extreme position that he admits Lovelock never takes, the other a marginalization into the horrendously un-scientific world of "pop ecology."

There are two problems with Dawkins' caricature: the first is that, from a lay perspective, the situation he describes of a radical imbalance of "dead" to "live" planets with many avenues by which the "dead" state can be reached seems quite similar to what we observe: we know of hundreds of thousands of planets with different atmospheric densities and compositions, different surface structures and environments while, right now, we remain with only a single instance containing proof of life. This response only goes so far, of course: many of those planets are known only through inference and, more directly, Dawkins is insisting that, since there is no interplanetary sex, there can be no genetic

selection. The notion of planetary copulation must have raised some odd memories for

Lovelock: back in his short stint at NASA,

There was much argument about the need to sterilize the spacecraft before sending them to Mars. I could never understand why it should be thought so bad to run the small risk of accidentally seeding Mars with life; it might be the only chance we had of passing life on to another planet. Sometimes the argument was fierce and macho; full of adolescent masculinity. In any event, feeling as I did—that Mars was dead—the image of rape, sometimes used, could not be sustained; at worse the act would be only the dismal lonely aberration of necrophilia. (Lovelock 1988, 6)

Side-stepping the issue of just what that kind of copulation that would be, there remain other problems with Dawkins' conception, which highlight the fact that we have a battle over scientific territory more than scientific truth. As Sagan and Margulis write,

if the critics of Gaia cannot accept the notion of a planet as an amorphous but viable biological entity, they must have equal if not greater cause to dismiss the origin of life. Surely at one point in the history of Earth a single homeostatic bacterial cell existed that did not have to struggle with other cells in order to survive, because there were no other cells. The genesis of the first cell can no more be explained from a strict Darwinian standpoint of competition among selfish individuals than can the present regulation of the atmosphere. While the first cell and the present planet may both be correctly seen as individuals, they are equally alone, and as such the both fall outside the province of modern population genetics. (Margulis and Sagan 2007, 180–1)

There is a strain of planetary exceptionalism that runs through this response that I want to ignore: discussions of the uniqueness of the earth tend to devolve very quickly into the harsh reality that, not only from the point of view of pure self-interest is the planet quite special but that, it is also, through a product of the paucity of our knowledge, unique. The latter point gets lost in the mysticism of large numbers: we predict the existence of millions of planets and while we are able to analyze chemically the atmosphere of only a fraction of those, even at the larger end of the scale we are looking at a population far short of the number of conjoined mutations that led to life here. Instead, I want to focus on the notion

that Gaia's structure, that its presence as a system of interconnected feedback loops itself, somehow moves it beyond the boundary of Dawkin's gaze. Part of the defensiveness of his reaction seems to be focused on the temerity of Lovelock—a geophysicist for God's sake—to intrude upon the territory of the evolutionary biologists who, it must be said, have enough difficulty maintaining their own arguments these days. As a student and scholar of religious studies, this is somewhat ironic: these boundaries in scientific domains are very tightly policed, yet anybody feels fully qualified to write about religion, whether they have any training or insight into the field or not.

What is missed in this critique is that Gaia is not a theory grounded in evolution, but in sustainability or, perhaps better, maintenance; it does not claim a teleology where the Earth is actively moving towards some future state. Rather, it claims that there are a host of independent and interconnected processes that seem to work together in order to maintain a certain set of tolerances for a wide variety of conditions, and that the common presence across these is life itself. In simpler terms, the Earth is not a living being; it is a self-regulated system that supports life.

Gaia itself is not an organism directly selected among many. It is an emergent property of interaction among organisms, the spherical planet on which they reside, and an energy source, the sun. Furthermore Gaia is an ancient phenomenon. Trillions of jostling, feeding, mating, exuding beings compose her planetary system. Gaia, a tough bitch, is not at all threatened by humans. Planetary life survived at least three billion years before humanity was even the dream of a lively ape with a yearning for a relatively hairless mate. (Margulis 1998, 119)

Margulis may sum up the situation most concisely when she claims to “prefer the idea that Earth is a network of ‘ecosystems’ over any personification of Mother Gaia.” (Margulis 1998, 106)

The conversation between Lovelock and Dawkins—or, better, between Gaia and the “selfish gene,” is really one of fundamental assumptions. Dawkins’ flame burned brightest in his extended discussions of genes as operating amorally and independently, striving only for self-replication. This was the heyday of the “gene for” discussions: *as soon as we identify the gene for cancer and we will someday isolate the gene for psychopathic behavior and birth defect screening procedures are moving to a model of searching for the gene for specific conditions*. Anything that smacked of communalism, of group behavior or identity, of an extended pattern of interaction between organisms and their environment was vehemently denied and dismissed, albeit often with the same rhetorical strategy demonstrated above: the escape hatch of “maybe someday a model will be created but I doubt it” was left open. It turns out it was needed. The more we discover about genetic behavior, the more we discover about the behavior of organisms, the more infuriatingly complex the picture becomes: for an overwhelming number of genetic characteristics, there is no “gene for” to be found. Instead, there is a network of interactions between different genetic sets where various genes combine over time in ways that seem to depend on a variety of necessary and sufficient other genetic combinations in order to create a context where different conditions may emerge.

Most properties are affected by many genes; most genes affect many properties. Also, owing to polymorphism, properties which are similar in living individuals may be produced by different combinations of genes. The effect of a given gene can vary greatly, too, according to the influence of other genes which are combined with it. Moreover, genes tend to be correlated in blocks in a way which usually makes it hard to identify the influence of each of them. Thus, even properties which might seem no more complex than eye colour are normally impossible to change without a large, unpredictable series of other changes. (Midgley 1985, 47)

It is important to note that other narrative models for the evolutionary role of genes have

existed and continue to exist within the community of evolutionary biologists themselves:

The model for developmental biology imagines that a master gene triggers a subordinate gene, which cascades to downstream genes in a descending hierarchy of control. In this picture, bodies develop as though a bowling ball were accurately rolled to hit the genetic kingpin at just the right spot and cause all the genetic bowling pins behind to fall down in perfect order. Producing a normal baby is bowling a genetic strike.

Instead, imagine that genes are like mice released at the top of the bowling lane, who scurry down the lane, bumping into genetic pins as they go and eventually knocking down all the genetic pins in a variable, but directional, clamor. In my picture of how development works, diversity figures from the very beginning.

The narrative I tell of development emphasizes the interrelatedness of gene function and avoids exaggerating the role of genetic control. My model of how a gene works is the “genial gene”—a gene that cooperates with other genes, in contrast to the well-popularized concept of the “selfish gene.” In other words, my narrative of development deemphasizes individualism. (Roughgarden 2004, 186)

Roughgarden’s work offers a different way to imagine evolution, well-grounded in “hard research.” It also begins to open up the evaluation of evolution to notions of diversity and complexity, which are required thought-partners as more information emerges. For example, one of the core features of our genetic code is the amount of noise in the signal: our genes are anything but the highly streamlined machine that is often portrayed. Instead, they are full of unused, repetitious genetic material that seems to never be accessed and used, but is rather part of the by-product of the arbitrary nature of genetic mutation:

Redundancy is a common feature of living organisms where different genes are involved in the same or in partially overlapping functions. While this may seem a waste, mathematical models show that evolution by natural selection has to produce molecular redundancy because when a new function is necessary it cannot be carried out by a gene that is already doing something else, without compromising the original function. On the other hand, if the gene gets duplicated (by mutation), one copy is freed from immediate constraints and can slowly diverge in structure from the original, eventually taking over new functions. This process leads to the formation of gene “families,” groups of genes clearly originated from a single ancestral DNA sequence, and that now are diversified and perform a variety of functions (e.g., the globins, which vary from proteins allowing muscle contractions to those involved in the exchange of oxygen and carbon

dioxide in the blood) ... the majority of duplicated genes end up as pseudogenes, literally pieces of molecular junk that are eventually lost forever to any biological utility. (Pigliucci 2003, 103)

Given this, Dawkins' mocking note that "the whole world is a fine-meshed network of interrelationships, a web of connections which it has taken thousands of years to build up" (Dawkins 1982, 237) is recast in a totally alternate key. Genetic modeling is more systemic than mechanical, a proposition strongly echoed by Fritjof Capra when he writes that

The great achievements of molecular biology, often described as "the cracking of the genetic code," have made us think of the strands of genes in the DNA as some kind of biochemical computer executing a "genetic program." However, recent research has increasingly shown that this way of thinking is quite erroneous. In fact, it is as inadequate as the metaphor of the brain as an information-processing computer. The complete set of genes in an organism, the so-called genome, forms a vast interconnected network, rich in feedback loops, in which genes directly and indirectly regulate each other's activities. (Capra 1996, 204)

There is a ghost from previous chapters that hovers here: Dawkins may be seen, I believe, very much as part of the final thrashes of the old guard, a violent spasm that may still twitch for decades to come, but is clearly fading, "like a face drawn in sand at the edge of the sea." (Foucault 1970, 387) Foucault's image is apt here: the linear genetics of Dawkins bear direct inheritance from the modes of knowledge that he examines in European thought since the sixteenth century.

The horizon of an archaeology, therefore, is not *a* science, *a* rationality, *a* mentality, *a* culture; it is a tangle of interpositivities whose limits and points of intersection cannot be fixed in a single operation. Archaeology is a comparative analysis that is not intended to reduce the diversity of discourses, and to outline the unity that must totalize them, but is intended to divide up their diversity into different figures. Archaeological comparison does not have a unifying, but a diversifying effect. (Foucault 1972, 160)

It would be wrong to simply paint genetic research in the late twentieth century as

discursively old-fashioned, with Gaia—or, perhaps more properly, some of the figures we will meet shortly, like Capra or Maturana and Varela—as the postmodern correction. But it is likewise irresponsible to ignore the relationship between science and the centuries old wave of cultural thought that Foucault—and countless others—have spent so much time (and to such a wide degree of sophistication and success) analyzing.

Lovelock can certainly be seen as part of the undertow to that wave, a metaphor chosen intentionally to highlight how interconnected they are: Gaia is not an antidote to the selfish gene, nor is it a harbinger of some new age of cultural enlightenment, but it is representative of a different way of analyzing systems, a different approach to seeing interconnectedness as being on par with visible difference in its ability to contribute to understanding. Margulis' reflection on her own position within science is revealing here as well: “As a species, we still fear the eccentric in our views of ourselves. Despite or perhaps because of Darwin, as a culture we still don't really understand the science of evolution. When science and culture conflict, culture always wins. Evolutionary science deserves to be much better understood.” (Margulis 1998, 4)

Evolutionary Systems: From Capra to Complexity

We require just a little order to protect us from chaos.

Gilles Deleuze and **Félix Guattari**, *What Is Philosophy?*

As one way out of the impasse between Lovelock (and Margulis) and Dawkins, I

want to turn the question of evolution on its head, and expand its domain slightly as well by looking at Fritjof Capra's *The Web of Life*. Capra is of course the theoretical physicist who first became a cult figure in the emergent New Age in the mid-1970s with the publication of *The Tao of Physics*. While a remarkably frustrating book from the perspective of a scholar of religion (Capra conflates the myriad specificities and differences of cultural practices across vast geographical and temporal scales into a largely non-differentiated "east," a practice with a rich history in the West that continues unabated), *The Tao of Physics* does offer some initial explorative directions that Capra would follow quite passionately in his later research and writings. It also, quite importantly, brings the notions of physics and, more specifically, quantum physics, into the discussion: while this thesis looks more closely at both biology and the environmental sciences, the interactions between modern religious movements and physics has been the template for many of these moments. Olav Hammer, a theorist to which we will return in more depth in the final chapter, provides a useful overview to keep in mind:

Interestingly, modern physics is used by several faiths to support their sometimes mutually incompatible claims. To this effect, different religious traditions choose partly different aspects of physics for their apologetic purposes. Whereas this section concentrates on quantum physics, since this is the aspect of modern science that has most preoccupied the Esoteric Tradition, spokespersons of a theistic faith may be more inclined to rely on the anthropic principle, the claim that the laws of physics are fine-tuned for the existence of life. One might argue that this selective reading of science is due to the interest to the New Age in human consciousness, ESP and healing, whereas theists are more interested in finding support for a "fine-tuner" of the universe, i.e. God. (Hammer 2003, 261)

If anything, Hammer's net is cast quite tightly: we see the same impact of popular understandings throughout the humanities. Consider this from Gianni Vattimo:

The emancipation and liberation that mankind has always sought are attainable through a weakening of strong structures, a reduction of claims, and that implies,

in general terms, that quality counts for more than quantity, that listening to what others have to say counts for more than measuring objects with precision in all fields, including science, truth itself is becoming an affair of consensus, listening, participation in a shared enterprise, rather than one-to-one correspondence with the pure and hard objectivity of things: this objectivity is only conceivable as the outcome of a social labor that binds humans to one another rather than to the “reality” of objects. (Vattimo 2006, 35)

It’s a lovely and compelling passage, and is embedded in a much longer exegesis on freedom and moral responsibility to which we do disservice in our excision. But it is also an insightful artifact of the degree to which the narrative of physics—for what else can he be referring to in his “even science” aside—has spread notions of being comfortable with a conception of truth that has wandered far afield from Newton’s precision. Note, of course, that many of the actual scientists that study these phenomena would protest vehemently against these characterizations, insisting that, indeed, their work is profoundly tied to objective reality. Still, consider the explanations of the Higgs-Boson particle that, in the summer of 2012, triumphantly accompanied its what? Confirmation? Inference? Certainly not observation or measurement, in any commonly understood way. The lack of reality of objects creeps back in.

We—and Capra—follow Hammer in being most concerned with quantum physics, but will also wander into other dimensions of the discipline. Capra’s scientific bona fides came under fire for many of his interpretations in *The Tao of Physics*, most notably for his devotion to what is known as “bootstrap theory,” a hypothesis formulated by Geoffrey Chew in the early 1960s, which rejected the historical search for ever-more-fundamental particles (which became known as “quark theory”) in favor of the recognition that “the theories of atomic and subatomic physics made the existence of elementary particles increasingly unlikely. They revealed a basic interconnection of matter, showing that energy

of motion can be transformed into mass, and suggesting that particles are processes rather than objects.” (Capra 2000, 285) The real issue among the scientific community—or at least the small percentage of the scientific community that would gain exposure to Capra’s writing—was that

The discovery of the so-called J/ψ meson in 1974 decisively confirmed the quark model, and the scientific community almost unanimously adopted the quark hypothesis as the definitive model of particle physics. Thus, by the time Capra published the first edition of *The Tao of Physics*, Chew’s proposal had already been demoted to the status of yet another historical curiosity in the development of physics. Nevertheless, Capra continued to support the bootstrap hypothesis in his later writings, and avoided informing his presumably less knowledgeable readers of the fact that his argument in part rested on marginal or even defunct theories of physics. (Hammer 2003, 285–6)

Whatever we call the intellectual advance surrounding the Higgs Field this past summer, it did serve as the final turn of the screw in moving the quark hypothesis, much like the Gaia hypothesis, relatively solidly into the realm of established and accepted scientific truth. Or, barring the discomfort of that term, into a firm position within the currently accepted model.

Hammer’s criticism is deadly from the perspective of the scientific world, but perhaps not so much if we view Capra as searching much less for scientific truth than for an interpretive framework through which he can make sense of a world that has moved from being dominated by the once-simple notion of Newtonian mechanics, where the equations could prove maddeningly complex but were highly dependable, to one where “all we can do is predict the odds.” (Capra 2000, 133) Both Hammer and Hanegraaff agree that *The Tao of Physics* is a starting point for Capra, albeit a highly problematic one that Hammer, in a somewhat scathing turn of phrase, summarizes as a combination of “a view

of quantum physics shared by practically none of his colleagues with a presentation of the Orient that most specialists in Asian religions would regard as fundamentally misguided.” (Hammer 2003, 286) Neither, however, are willing to dismiss him entirely, partially because—quite importantly for our purposes—“Capra’s type of physics-mysticism parallelism, whether valid or not, has unquestionably become one of the cherished beliefs of the New Age movement.” (Hanegraaff 1998a, 129)

Speaking of the writings of Swedish mystic Emanuel Swedenborg, Robert Fuller writes

It was their form and vision, not their substance, that gave them their poignancy. Their influence was much like that exerted by the writings of Teilhard de Chardin, which in the 1960s and 1970s helped pull together the religious and scientific interests of many involved in holistic and psychic healing. That is, they lent an ideological matrix to a wide array of activities and gave them a certain plausibility they might otherwise have lacked. (Fuller 1989, 49)

Similarly, Capra’s importance is not as a physicist nor as an interpreter of eastern religion, rather it is his contributions to this ideological matrix that form his greatest legacy. His later writings reflect the recognition that his focus was “not so much quantum physics *per se* as a specific worldview for which he attempts to find support in modern science.” (Hammer 2003, 286) In doing so, Capra shifted his attention from physics to other emerging scientific fields; however, unlike some of his followers and unlike part of the larger religious movements that embrace his work, Capra never harbored a hostility towards science or the established scientific methods. Indeed, he argues that

the key to a comprehensive theory of living systems lies in the synthesis of those two very different approaches, the study of substance (or structure) and the study of form (or pattern). In the study of structure we measure and weigh things. Patterns, however, cannot be measured or weighted; they must be mapped. To understand a pattern we must map a configuration of relationships. In other words, structure involves quantities, while pattern involves qualities. (Capra 1996, 81)

Capra's focus on form and pattern is really a focus on system thinking, on analyzing flows of organization and, importantly, self-organization. Here, he draws heavily and explicitly on the work of Humberto Maturana, especially in Maturana's collaborations with Francisco Varela. Maturana and Varela were the first use the term *autopoiesis* (literally, self-making) to refer to the processes by which living systems achieve self-organization. This understates by a bit; Niklas Luhmann offers clarification when he describes autopoiesis as it relates to social systems:

Autopoietic systems, then, are not only self-organizing systems, they not only produce and eventually change their own *structures*; their self-reference applies to the production of other *components* as well. This is the decisive conceptual innovation. It adds a turbocharger to the already powerful engine of self-referential machines. Even *elements*, that is, last components (in-dividuals) which are, at least for the system itself, undecomposable, are produced by the system itself. Thus, everything that is used as a unit by the system is produce as a unit by the system itself. This applies to elements, processes, boundaries, and other structures and, last but not least, to the unity of the system itself. Autopoietic systems, then, are sovereign with respect to the constitution of identities and differences. (Luhmann 1990, 3)

Of interest, in light of prior chapters, "Maturana and Varela begin their essay on autopoiesis by characterizing their approach as 'mechanistic' to distinguish it from vitalist approaches to the nature of life: 'Our approach will be mechanistic: no forces or principles will be adduced which are not found in the physical universe.'" (Capra 1996, 97) Or, in Luhmann's words, "A social system can only communicate. A living system can only live." (Luhmann 1990, 13) In spite of this, echoes of Canguilhem are found quite often in their work, and when closely examined, the part of vitalism that proposes a unitive, holistic order to living systems is inseparable from autopoiesis, even if the ascription of spiritual power or matter to that part is rejected.

A key component of this turn away from a mystical vitalism is a deep embedding in

modern mathematical theory, if not in the math itself. Historically, one of the challenges to complexity has been the inexplicability of diversity; that is, without positing a plan, a creator, a teleological unfolding, how do we arrive at the dizzying array of organizational possibilities of the natural world? How do we explain how bumblebees dance or how crabs in the deep ocean exist on sulfur alone or anything at all about a platypus? The notion that *they just evolved that way* remains simultaneously true and unsatisfying, a situation born of two difficulties.

First, there is a vastness to the question that, in general, eludes our capacity for thought: not only are the numbers, the sizes, the timeframes too large to comprehend fully, the simplified models do little to address the situation satisfactorily. Noting, as Capra does, that “if the planet is represented by a globe the size of a basketball with the oceans and countries painted on it, the thickness of the biosphere would be just about the thickness of the paint” (Capra 1996, 214) makes for a striking image, but I would claim it does little to make real the incredible size of the earth itself—let alone the universe that surrounds it. Similarly, David Brower’s compression of the history of the planet into a biblical six days offers a stark presentation of the newness of humanity (we come into existence at about eleven seconds to midnight on the final day and start to write things down less than one second to midnight—as a contrast, dinosaurs have a good five hour run earlier that day), but I’m not sure that the scale translates into anything useful: the gap between the exemplar and its referent is just too great. We can look at a football field and imagine how big eight of them would be, end-to-end. Eight thousand, let alone eight million? Not so much. (For a description of Brower’s work, see Capra 1996, 261–2)

The other difficulty facing Capra is more daunting, and requires his being able to show that such complexity can be explained without resorting to religion. That he does so while remaining open to an emergent spirituality is part of the reason he is embraced by various segments of the New Age; that he does so at all requires a long digression into chaos. At the highest level, things began to fall apart shortly after Newton put them together: Newton (and Leibniz) gave us calculus and in doing so offered a series of solutions that, as we saw earlier, could land human beings on the moon. But in doing so they also ushered in several centuries of model-making, a tradition of using, essentially, brute force and a volume of approximation to serve as stand-ins for direct experience and accuracy. Calculus is based on flattening out curves into straight lines that are so small as to be “infinitely small” in difference from the curve itself. Doing calculations on straight lines is easy: put enough of them together and you can reassemble the results into something that is indistinguishable—at least at a glance—from the original curve itself. Math becomes model making: sophisticated model making, incredibly accurate model making, but model making nonetheless.

The precision of this world served to hide some of its mysteries, which were usually dismissed as relating to the realms of the very small or the very large—implying that they are marginal and unworthy of the bulk of our attention. This is patently false: whirlpools and tornadoes, the flow of a fast-moving stream over a bed of rocks, the dissipation of smoke, the spread of fire; these are things that range from the mundane to the spectacular and they exist in a world where Newtonian calculations are of little help, other than at the most generalized of levels (lest there be any notion of this list being

complete, here is another claiming that we encounter the same issues if we attempt to measure with any precision, “the coast of Brittany, the crater-filled surface of the moon, the distribution of stellar matter, the frequency of bursts of interference during a telephone call, turbulence in general, the shape of clouds”). And, as Jean-François Lyotard (the author of that second list) notes, this is part and parcel of the structure of reality: “Quantum theory and microphysics require a far more radical revision of the idea of a continuous and predictable path. The quest for precision is not limited by its cost, but by the very nature of matter.” (Lyotard 1984, 56–58) But this shortfall wasn’t only present in attempts to predict or describe the observed world: evolution itself raised the same questions. For example, consider the notion of convergence. In a highly problematic paragraph, Capra writes that convergence

Is the tendency of organisms to evolve similar forms for meeting similar challenges, in spite of differing ancestral histories. Thus eyes have evolved many times along different routes—in worms, snails, insects, and vertebrates. Similarly, wings evolved independently in insects, reptiles, bats, and birds. It seems that nature’s creativity is boundless. (Capra 1996, 232)

I call this quote problematic because the tendency of evolution to return to common solutions would actually be evidence *against* boundless creativity and indeed offers quite a challenge to a theorist, as it requires a model where mutation exists randomly, but in somehow limited avenues, where genetic change that begins to move in a certain direction finds itself guided in its development along recognizable pathways.

It turns out there are models that account for this exactly, but they all engage with areas of mathematics that only began to emerge, or at least, to draw serious consideration in the last century or so. At the most abstract level, they reflect ways in which periods of

great stability interact with moments of intense chaos, resulting in self-perpetuating and self-correcting patterns. These models show that, given a particular set of starting conditions, a particular set of possible interactions each with a particular set of rules, and a particular set of ongoing contexts that create particular forms of additional interactions and/or constraints, you can show that, indeed, a set of cells not only can evolve into eyes which then become stable as components of living organisms, but that such evolution shifts from the nearly impossible to the plausible (albeit still unlikely). This science is a science of relationship, communications, flow; it is a science of state transformations, of transition points, of pattern recognition. It is no longer sufficient to “solve for x ,” it has become necessary to observe x in its environment, to recognize its contingent relationship with y and z as well as its slow transformation into x_2 .

All of this becomes increasingly and incredibly complicated: certainly, the pure science side of it eclipsed my capabilities quite some time back in our discussions, and even the theoretical models that are spawned are very challenging to wrestle into some form of understanding. The difficulty is the same as with the history-of-the-universe-in-six-days mentioned above: we can easily isolate a few interactive systems and understand how they may fit together, but grasping a near-infinite number of them interacting simultaneously over as large an environment as the earth itself eludes us. There is a need for something to bridge the gap, something that takes us from the sense of wondrous amusement at the ability of fractal images to replicate perfectly the intricate paisley of fern leaves to an understanding of purpose.

Varela summarizes the problem by recognizing the need for

A subtle but powerful twist: we emphasize the system's coherence, instead of taking the perspective of a supposed design. In other words, we understand the system as an autonomous cognitive system: an active, self-updating collection of structures capable of informing (or shaping) its surrounding medium into a world through a history of structural coupling with it. (Varela 1987, 52)

Note that Varela is clearly trying to defend his language against something here, specifically, I would claim, a notion of *God's plan*, which is certainly one possible explanation for the same condition and, indeed, evangelical Christianity in America has found itself with some profoundly uncomfortable partners when it comes to forays into recent science. By skimming the surface of the possibilities, the traditional argument for intelligent design is reinforced: how do cells, which are indistinguishable from each other at early stages of development, “know” whether they will become fingernails, white blood cells, or linings on our lungs? How can simple mathematical graphs reflect the complexity of the natural world so perfectly? How can a given ecosystem depend so heavily on *just such* an arrangement of predators and prey, harkening back to Dawkins' “BBC Theorem?” How could the earth have settled its oxygen level at such a perfect point? In each case, the answer of the unfolding of the master plan of a great architect seems as understandable, and as compelling, as Varela and Maturana's intensely complex system modeling.

A Gut Feeling: Bacterial Sex and the Myth of the Self

Feeling humbled is, therefore, a logical response to the perception that organisms too small for us to see do exist, have existed and will exist happily without us. And that the reverse is not true.

Anne Primavesi, *Sacred Gaia*

Myths are even more Copernican than novels. Or perhaps we might say that if dogma moves in a Ptolemaic universe and novels move in a Copernican universe, myths move in an Einsteinian universe, a place of true relativity.

Wendy Doniger, *The Implied Spider*

At the beginning of *Symbiotic Planet*, Lynn Margulis asks essentially the same question: prompted by an inquiry from one of her sons, Margulis begins to probe what could possibly connect the “two major scientific ideas that I have worked on all my professional life, serial endosymbiosis theory (SET) and Gaia, and the relation of one to the other.” Her first answer is “Nothing ... or at least nothing as far as I’m aware.” (Margulis 1998, 2) This is a striking example of the gap we are trying to observe: what could possibly be the connection between Gaia, and its large, planetary large, claims of regulation and feedback processes and SET, which concentrates on the millions of microscopic and near-microscopic organisms that permeate all of life.

At the most abstract and most simplistic level, Margulis’ work has focused on an inversion of what had been accepted evolutionary canon, where the progression from a common, single-celled ancestor was seen as a long series of divisions, of branches by which organisms mutated into difference, creating all of the extensions of a tree of life spreading ever-outward from the common originary trunk. Margulis saw the question from a different starting point, most clearly described in her memory of going, at the urging of her son and collaborator Dorion

into the Boston MBTA Auditorium-Massachusetts Avenue station to see the graffiti scrawled on a worn map in a subway tunnel. The huge black letters queried, “Whence Come Amoebae in Chaos?” I laughed out loud. The statement, my focus, in essence my life question, shone on the dim walls of the dingy underground metro stop. (Margulis 1998, 18)

This question of how did the original bacterial soup come to be, of what led to the cell itself, is one that confirms her claim that her work “began off-center;” (Margulis 1998, 19) indeed, it would continue off-center into the present as well (or, nearly so: Lynn Margulis died in the fall of 2011). Her explorations into the initial formation of amoebae led her to pick up strands scattered across the landscape of Biology, papers long ignored and thinkers long discarded, in addition to what were seen as minor developments in canonized work. She wove all of this together into a fundamentally different narrative structure, one that depended on fusion, on coming together, on emergent combination, on a whole host of biological works that she embraced under the rubric of *symbiogenesis*.

She knew what she was up against. The notion of branching, of a constant chain of evolutionary process that moved ever-forward, that gave us both a past from which to distance ourselves and a better future into which we could project our progeny was—and remains—a core assumption of western scientific thought. As she writes,

Our outlooks shape what we see and how we know. Any idea we conceive as fact or truth is integrated into an entire style of thought, of which we are usually unaware. Call the cultural constraints “trained incapacities,” “thought collectives,” “social constructions of reality.” Call the dominating inhibitions that determine our point of view whatever you wish. They affect all of us, including scientists. All are saddled with heavy linguistic, national, regional, and generational impediments to perception. Like those of everyone else, the scientist’s hidden assumptions affect his or her behavior, unwittingly directing thought.

One widely held unstated assumption is the great chain of being. It defines the venerable position of humans as the exact center of the universe in the middle of the chain of being below God and above rock. This anthropocentric idea dominates religions thought, even that of those who claim to reject religion and to replace it with a scientific worldview ...

These ideas are rejected as obsolete nonsense by a consistently scientific worldview. All beings alive today are equally evolved. All have survived over three thousand million years of evolution from common bacterial ancestors. (Margulis 1998, 3)

Instead, Margulis offers a sense of loops, of evolution by incorporation. Note that this view is not necessarily kinder or gentler: while symbiosis importantly offers up a way to understand evolutionary cooperation in new light, there is no requirement for rose-colored glasses. One cell ingesting another to form a new third set of capabilities may occur at great cost to one of the original members; as such, the term incorporation may be more evocative than language that seems to drape the process in a friendly notion of collaboration. Many of these takeovers are indeed hostile.

Behind the great chain of being and, indeed, behind huge swathes of scientific thought, lurks the principle of differentiation: we categorize objects into clear arrangements based on observable difference and even changes in the scope of our observational data don't shake our belief in the primal necessity of the structural operation. That is, while genetic analysis is now eagerly shifting animals between taxa, they remain firmly this or that. At its most extreme, this is why the intersexed pose such a fundamental problem to the traditional medical model: if you cannot be categorized as male or female, how can you exist? Margulis' work, along with that of hundreds of other scientists, some working with her, many others in parallel ignorance, is deeply threatening to this. Examples abound, with one area of concentration being the intense overlap between plants and animals when water and sunlight merge; one, at some detail, from Margulis herself:

In Brittany, on the northwest coast of France, and along beaches bordering the English Channel is found a strange sort of "seaweed" that is not seaweed at all. From a distance it is a bright green patch on the sand. The patches slosh around, shimmering in shallow puddles. When you pick up the green water and let it slip through your fingers you notice gooey ribbons much like seaweed. A small hand lens or low-power microscope reveals that what looked like seaweed are really green worms. These masses of sunbathing green worms, unlike any seaweed, burrow into the sand and effectively disappear. ... The flatworms of the species

Convoluta roscoffensis are all green because their tissues are packed with *Platymonas* cells; as the worms are translucent, the green color of *Platymonas*, photosynthesizing algae, shows through. Although lovely, the green algae are not entirely decorative: they live and grow, die and reproduce, inside the bodies of the worms. Indeed they produce the food that the worms “eat.” The mouths of the worms become superfluous and do not function after the worm larvae hatch. Sunlight reaches the algae inside their mobile greenhouses and allows them to grow and feed themselves as they leak photosynthetic products and feed their hosts from the inside. The symbiotic algae even do the worm a waste management favor: they recycle the worm’s uric acid waste into nutrients for themselves. Algae and worm make a miniature ecosystem swimming in the sun. (Margulis 1998, 9–10)

Under very high powered microscopic examination, it is possible to identify where the worm ends and the algae begins. But what is served by such severance? If they are separated, both die, although it is easier to cultivate colonies of *Platymonas* without a host than it is for the flatworm to exist without its symbiotic partner.

Margulis challenges us to reconsider what it means to be an individual, a call that also has profound implications for the arguments of Dawkins outlined above. At a base level, “it is not clear what sociobiologists think an individual is; they fail to analyze or define this term, assuming that it is self-evident because of a parochial focus on the animal kingdom.” (Margulis and Sagan 2007, 214) More prosaically,

As positivists, materialists, or physical reductionists in the Western scientific tradition, we would like to think that the picture of the body as an adequately closed topological surface is necessary and sufficient prima facie self-evidence—for the self. And so it is within a certain rectilinear closure. However, as we—and even this coauthorial “we” must be put in quotation marks as we ponder the self, the subject, the person, et cetera—intimated, the egotistic I is clear only in the sense of a fundamentally fictional or topologically displaced mirror image; there is nothing behind the mirror. (Margulis and Sagan 2007, 19)

While this passage opens both towards Buddhism and, more compellingly for me, towards Irigaray and her own questioning of the notion of the self, most eloquently in *This Sex Which Is Not One*, we will instead steadfastly maintain our focus on the evolutionary

argument itself, the crux of which is the insistence that evolution cannot work above the level of the individual, that there is no such thing as “group selection.” This is a standard and important concept in evolutionary thought: groups don’t evolve, individuals do. At the extreme, this is the answer to the myth of the hundredth monkey, a common contemporary trope that appeared initially in the 1970s with reference to macaque monkeys that lived on Japanese islands who were all able to acquire skills as soon as one hundred members of the troop learned it: the hundredth monkey represented a tipping point where the newly acquired knowledge was instantly accessible to the entire group. Often used as a metaphor for an impending change in human consciousness, the hundredth monkey is seen by most scientific commentators as a clear example of bad science misapplied, with a core error in understanding how genetic improvements work.

There are many responses to the model that supposes that no evolution is possible beyond the level of the individual. The most common and, indeed, most banal, are all of the examples of cooperative behavior that abound in virtually any glance at the natural world: from child-rearing practices to cross-species engagement in feeding and nesting, there is an overwhelming amount of evidence that species do, in fact, quite often work together both individually and in groups. This is fairly easily rejected, however: the ability to cooperate may very well be a trait that confers evolutionary advantages upon its bearer, however, it does so individually. That is, the gene is still acting “selfishly” for the individual by passing on the traits required to work cooperatively.

More interesting to me and, indeed, the primary focus of the rest of this chapter, is the assertion, in what may be seen as an odd refraction, of the existence and possibilities of

the embodied individual over and above their genetic material; that is, the claim that we are, indeed, more than our genes. Taking the notion that there is no such thing as group selection as being a thin code for there only being the existence of selection at the genetic level, an understanding emerges that “sociobiology denies the ontological value of the individual; all value rests in the gene pool and in the relationship of ‘inclusive fitness.’ The individual is simply a package for ‘the selfish gene.’” (Thompson 1987, 21) This critique, leveled by William Irwin Thompson in the introduction to *Gaia: A Way of Knowing. Political Implications of the New Biology*, is profoundly uncomfortable with the notion that we are merely assemblies and carriers, our humanity a side-effect of genetic processes yearning to replicate, where the only truth is that of the component part, the mechanical operation. This has deep philosophical implications:

The role of unities is thus doubly denied by sociobiology: first, unities are broken down and defined in terms of fragments in the reductionist method, and, second, abstractions like species, gene pool, and inclusive fitness are reified and not simply seen as descriptive procedures of the observer. This world of broken fragments and chimerical abstractions is the frightening world of Science, capitalist or socialist, a world completely set apart from the organic process of life in an ecology. (Thompson 1987, 21–2)

Thompson sees these notions as troubling and dangerous, and he moves very quickly from the scientific through the ethical to the religious, illustrating that although it may seem that we have been far removed from spiritual concerns in this chapter, they are always present, if slightly askew from our current angle of vision.

Thompson moves his focus to the notion of the tool, joining the mechanistic thinking above to the idea that the tool and, ultimately, the use of tools to destroy and especially to kill, is what “made us human and separated culture from nature. In this view

it is in the act of killing that we most truly perform our humanity. The weapon has a force of its own and it hurls its user into a new ecological niche, a new adaptation, and all that is left behind is the sloughed-off animal nature of the primitive.” (Thompson 1987, 23–4)

This idea (which we first encountered in the opening chapter’s discussion of Bataille) is initially contrasted with research suggesting a far more cooperative model of early hominids before the explicit turn to the religious, where “food was transported from one place to another where it was shared in circumstances of relative safety. Now here the basic act which makes us human is the sharing of food; small wonder that the religious among us feel that we most truly perform our human nature in the communion that comes from the sharing of food.” (Thompson 1987, 25) Thompson continues, somewhat rhapsodically:

In the technological definition of human culture, the tool basically separates culture from nature. In the social definition of human culture, the act of food-sharing is a relationship between nature and nurture. This vision of relationship is symbolically emphasized in the Christian sacrament, for when one takes raw grain and turns it into bread, one is involved in a performance of the movement from nature to culture; and so it is with the movement of the grape into wine. When Jesus takes bread and wine and says: “Take this in remembrance of me, for this is my body and blood,” he is not the masochistic psychopath that Freud made him out to be, but a poet with an ecological vision of life who is using myth and symbol to express how all life is food to one another. The *Upanishads* would express the idea in a different poetic diction to say that: Earth is food; air lives on earth; earth is air, air is earth; they are food for one another.” The theological idea, then, of the Mystical Body of Christ put forth by St. Paul, is a vision of a planetary being, a cell in which we as individuals are organelles. (Thompson 1987, 25)

Thompson is really asserting the individual in order to affirm the collective and, if we are to be generous, it is only a lack of understanding of the complexity of the biological reality that leads him to his insistence on the primacy of the unique self.

Margulis, of course, suffers from no such limits, and her argument against the

established tropes in evolutionary thought prove the most interesting obstacle yet for thinking of the primacy of the gene, as they open up a space where the very nature and definition of the individual is called into question. Understanding Margulis' position requires a slight, yet potentially profound, detour into cellular biology and sex. Specifically, and perhaps disappointingly, bacterial sex, as opposed to the more familiar meiotic sex practiced by virtually all animals and plants.

We know that mammalian copulation is merely one of many fertilization and reproduction strategies that exist and while many biologists would protest against our anthropomorphic tendencies to see the variety of options employed by reptiles, amphibians, birds, insects, fish, and plants as odd imitations of that model, they do remain fundamentally understandable. "Meiotic sex involves two reciprocal processes: the reduction by half of the number of chromosomes to make sperm, eggs, or spores and the fertilization that reestablishes the original chromosomal number." (Margulis and Sagan 2007, 115) So, whether the eggs are kept internally, whether the sperm is left to float on the ocean currents or the summer breeze, whether fertilization occurs once or several times, whether there is a relation between the organisms involved in fertilization and those engaged in the future task of rearing the young, the process of the formation of haploid cells that later join together to form diploid cells in offspring repeats. Meiotic sex serves two purposes: it enables the transmission of genetic material across organisms and it allows for the survival of the species.

"While bacteria have sex under certain conditions, they never need it to reproduce." (Margulis and Sagan 2007, 115) It is a simple sentence, but one that has enormous impact:

for bacteria, the only utility in sex is the free and open transmission of genetic material. Bacteria move genetic material amongst themselves in chaotic patterns, resulting in a dizzying complexity of adaptation, rejection, and the discovery of genes being both used and abandoned in species far removed from their source.

Bacterial sexuality fundamentally differs from the sexuality of so-called higher organisms because it occurs independently of reproduction, crosses “species” barriers, and involves, in principle, the sexual sharing of genes by bacteria all over the world. Indeed, Canadian bacteriologist Sorin Sonea and his colleague Leo Mathieu point out that bacteria, since they are able to trade genes freely across would-be species barriers, are not really divisible into (or assignable to) species at all. (Margulis and Sagan 2007, 138)

So much of our conception of life depends on the notion of the individual: individual people, individual opossums, individual cells tightly bounded by their membranes. Margulis’ work threatens these notions on two fronts, first by recognizing that such conceptions only apply to some of those things that surround us that are considered, by almost any definition you choose, fully alive; and second by realizing that even in our limited world of mammalian behavior, we are a combination of these forms of life working symbiotically. The following is taken from the transcript of the second Lindisfarne conference on Gaia, and is a presentation given by Margulis in conjunction with her husband, the Professor of Microbiology, Ricardo Guerrero (John and Nancy Todd are both biologist and ecological activists based in Massachusetts who were also participants in the conference).

Guerrero: ... An “individual” is intrinsically complex and intrinsically divisible. It sounds paradoxical, but in the prokaryotic world (i.e., all life until a mere 1.2 billion years ago) nothing smaller than a community can be an individual. The integrating mechanisms of the members of the community make the individual. Bacteria, prokaryotes in general, can practically interchange genes or other materials among themselves. “Individuals” emerge when this interchange is restricted; the membrane toughens, the genes become packaged into a membrane

bounded nucleus, and our world of sex and death emerges.

Margulis: I'd like to clarify Ricardo's comments for people who are not familiar with bacteria. Imagine if John Todd went out for coffee and drank some genes, drank up someone else's genes so when he comes back, John Todd, who was blond when he went out, now has Nancy Todd's brunette hair. I mean, he simply changes his genetic makeup by eating; this is what bacteria do all the time.

We have trouble imagining the promiscuity, the genetic laxity of bacteria that consume genes as if they were food. Genes for bacteria are replicating food. Bacteria exchange genetic material in a way that is completely different from our experience. (Margulis and Guerrero 1991, 59–60)

The key conceptual element is that, for Margulis and for an increasing number of biologists, there has not been anything that we could accurately describe as an individual for a very, very, very, very long time—since the first bacteria began to exchange genetic information with its neighbor. She asks, “how, then, can evolution not work at a level above that of the individual if the very first animals were themselves multicellular collections—populations—of once independent heterogeneous cells?” (Margulis and Sagan 2007, 214) In other words, millions and millions of years ago, when the very first animals and plants began to appear, they were the product of a complex series of joining and negotiations between single celled organisms and, from that day on, the notion of existence outside of a group has been itself flawed.

The animal body itself has evolved as a unit from a morass of individuals working simultaneously at different levels of integration. Sociobiologists and neo-Darwinian theorists disdain “group selection” because they don't have strong enough cases for its existence in populations of animals. But it may well be that, due to their large size and late appearance on the evolutionary stage, animals have not yet achieved the high level of group consolidations found in microbes. No matter how elegant the mathematics, dismissing group selection as an evolutionary mechanism requires dismissal of individual animals also, for the body of the academic itself provides a counterexample to the thesis that natural selection (if it “works” at all) never works on “groups.” A person is, after all, a composite of cells. (Margulis and Sagan 2007, 215)

We are, always already, plural. And, fractal: that is, Margulis and Sagan move from

this, which is, at the very least, an issue under hot debate in the scientific community, to an emphatic, soaring declaration of emergent complexity, in language that Capra would certainly approve:

Therefore, we must (again, within this framework) concede that evolution favors populations of individuals that act together to re-create individuality at ever higher levels. This somewhat freaky assertion calls into question the very usefulness of trying to isolate the units of natural selection: because of the articulation or community relations of living things, the differential reproduction of units at one level translates into the differential reproduction of units at a higher, more inclusive level. I anticipate that the mathematical theory of fractals, in which the same features are present in interlocking geometrical figures at various scales of analysis, may be useful in illustrating the principle of emergent identity in the series cell, multicellular organism, and superorganismic society. In principle, the “animal-like” nature of Earth can be considered fractally as resulting from the Malthusian dynamics of cells reproducing in a limited space. (Margulis and Sagan 2007, 216)

So, where traditional evolution sees an ever-dividing tree, branches that constantly fork into more and more refined and specialized varieties, Margulis and Sagan propose an unfolding, a mathematically understandable pattern whereby complexity increases as components (first, cellular; later at the level of the organism) are forced, due to limited resources, to overlap and join, merge and assimilate.

We are in no position to judge the scientific merit of Margulis’ position—or Dawkins’ for that matter. Instead, the focus is on the form the arguments take, the kinds of logic they invoke on their behalf: in Margulis, we find the kind of questioning, the invocation of complexity, the focus on emergence, cooperation, and possibility that is, I would claim, representative not just of turns in the development of modern science, but in other realms of thought as well: the same forms of thought allow reflections on the nature of the earth itself, and it is no accident that the essay from which the bulk of the argument against traditional evolution is taken ends with a joining of two of the major tropes of our

explorations: moonrise and the body itself:

Perhaps another Greek myth, because it has not strayed onto the dangerous battleground of truth, better sums up the present philosophical situation. Once Narcissus stood and eyed the still waves that reflected his own image. He had never seen himself before. He became infatuated. And now we gaze in the looking glass of satellite imaging technology. Again we see the water. Again ... but what is “ourselves”? And who—or what—is *this body*? (Margulis and Sagan 2007, 221)

Sudden Shifts: The Ends of Science (Texts) as an Opening to Ideologies of Evolution

The environmental movement ... addressed ultimate, religious questions without the language or concepts of religion or even those from the academic study of religion. To complicate things it crossed many of the boundaries the culture enforced between reason and emotion, relying on science to describe nature but seeking spiritual experience and emotional connections to the world, and a purpose for individuals and the species, accepting a material world and material explanations but explaining our relationship with the world in moral terms.

Thomas Dunlap, *Faith In Nature*

This may be seen as a minor example of what is a standard structure in many of the texts produced by scientists for wider consumption: the bulk of the work will be solidly scientific, draped in numbers and experimental results, in finely crafted conclusions and the slow burn of the careful layering of theoretical concepts. Then, in the final paragraphs or the final chapter, a sudden turn to the soaring metaphor, the far-flung future.

I had been struck for some time by certain remarkable prophetic and metaphysical passages that appeared suddenly in scientific books about evolution, often in their last chapters. Though these passages were detached from the official reasoning of the books, they seemed to still be presented as science. But they made startling suggestions about vast themes such as immortality, human destiny and the

meaning of life. These are difficult topics with which philosophical and religious thinkers have long wrestled. But the scientific writers did not usually refer to any earlier discussions. They simply and confidently laid down their own surprising views about them. Their pronouncements seemed to be seriously intended. But it was far from clear on what level they were meant to be taken. (Midgley 1985, viii)

This paragraph occurs in the introduction of Mary Midgley's *Evolution as a Religion*, which offers, I believe, a bridge from the first part of this chapter across the question of *just what does all of this have to do with religion?* First drawn to the topic through the excessive claims she would occasionally encounter at the end of works by scientists, Midgley examines what the relationship is between science and faith from a largely philosophical view: that is, she is not looking at the role of faith in the lives of scientists or at any real sense of compatibility or competition between the two domains. Instead, her questions center on how notions taken as scientific can function *as a religion* in many of their aspects. This phrase ends up being key to her consideration, culminating in a consideration of what she terms "secular faiths," where she claims that

to say that Marxism or evolutionism, or indeed art or science, is serving as a religion, can be a useful way of speaking today. It is not like saying that golf is someone's religion, which is probably just a joke, and at most means only that it is the most important thing in his life, the thing to which the rest gives place. Here there is not likely to be any system of thought arguing that golf ought to take precedence, and giving reasons why it should do so. Moreover, devotion to golf is likely to have only a negative effect on those parts of life which take place off the golf-course. It leads to their being neglected, not to their being differently conducted. But the other candidates we are now considering do have those thought-systems and that wider impact. They are, not accidentally but by their very nature, dominant creeds, explicit faiths by which people live and to which they try to convert others. They tend to alter the world. (Midgley 1985, 18)

This captures nicely the kind of thought Midgley associates with religion: religious concepts provide a justification for their existence and expansion, they offer models that allow individuals to conduct their lives differently: they alter the world. It's not a rigorous definition of religion and it's not one likely to pass intensive scrutiny; but it is, like all of

Midgley's thought, clear, concise and, ultimately, quite usable.

Still, the difficulties of her definition, and what they reveal about a certain level of naïveté with regards to the study of religion, do raise their head now and again in *Evolution As A Religion*, most egregiously with her avoidance of the rigorous specificity required to think clearly about any actual religious behavior, but also in her lack of engagement with the notion of experience and what religious behavior may mean to those who perceive it directly. This last underscores her unwavering commitment to rationality: she is not interested here in the excesses of mysticism or behavior driven by the throes of a newly sparked religious fervor. Indeed, it is the affirmation of rationality that allows us to examine the issue at all:

We need, then, to start by resisting unrealistic skepticism. We do have this general capacity for making sense of our moral ideas and for explaining our judgments to one another. We are therefore not actually helpless when it comes to evaluating faiths and ideologies. We can, for instance, separate the various elements in a faith and approve of some of them while disapproving of others. And for this we can give our reasons. We are not reduced to the mere legalistic manoeuvre of outlawing them wholesale from learned life by saying that they are not science. (Midgley 1985, 22)

Midgley is, above all else, a philosopher and a critical thinker, and the directness of her writing, the ability to look at complex issues from a practical and incisive position, provide a level of utility in our current explorations that warrant excusing her lack of expressed training in anthropology and the history of religions. These contrasts are on display in the very first paragraph, where along with a wonderfully cogent summary of why evolution itself is more than just a bit of science, she makes a sweeping anthropological claim that is at best overly broad:

The theory of evolution is not just an inert piece of theoretical science. It is, and cannot help being, also a powerful folk-tale about human origins. Any such narrative must have symbolic force. We are probably the first culture not to make that its main function. Most stories about human origins must have been devised purely with a view to symbolic and poetic fittingness. Suggestions about how we were made and where we come from are bound to engage our imagination, to shape our views of what we now are, and so to affect our lives. Scientists, when they find themselves caught up in these webs of symbolism, sometimes complain, calling for a sanitary cordon to keep them away from science. But this seems to be both psychologically and logically impossible. (Midgley 1985, 1)

The rest of the text is focused, however, on the final two sentences—the desire of scientists themselves (or, better, some scientists at some times) to create an arena that is somehow set apart from the symbolic and the poetic and the difficulty, indeed, for Midgley, the ultimate impossibility, of doing so.

Each of these ideas is key: Midgley was drawn to the topic by what seemed to be a desire on the part of scientific writers themselves to reach beyond the experimental data and into the larger world in their pronouncements about the future; she found that such a blurring of domains was not only endemic to the practice of science, but also in the end a clear necessity: “science is not just a formless mass of experimental data: it is a system of thought in which they are ranged, a system which connects with the rest of our thinking.” (Midgley 1985, 19) It is these connections that she finds most disturbing, the ways in which a scientific thought is fused into the wider consciousness, often in a deformed and ultimately malignant way.

In this, she is particularly concerned with two themes, two thought-fugues that return throughout a disproportionate amount of scientific discourse. “The first is the better known and the more obviously pernicious. It is the ‘Social Darwinist’ idea ... that life has been scientifically proved to be essentially competitive, in some sense which exposes all

social feeling as somehow mere humbug and illusion.” This notion persists despite, for Midgley, having “often been exposed as nonsense. ... But because of its strong dramatic force, as well as various political uses, this notion persists through repeated attempts to correct it, and often twists up the ideas even of those who think they are helping to get rid of it.” The second theme is one that we have already brushed against, that of evolution as “a steady, linear upward movement, a single inexorable process of improvement, leading ... into some superhuman spiritual stratosphere.”(Midgley 1985, 7)

A key question for Midgley is why these fables matter? That is, there are throughout human history hundreds of thousands of ideas, many of which are grouped together under various rubrics that hold sway over significant numbers of people. Yet, at this particular moment, she is aiming her concentration here. The answer has to do with a specific veneration of science that Midgley sees as holding cultural sway for the past century-and-a-half. She attempts to walk a very fine line, maintaining respect for and veneration of science where appropriate, but sensitive to those moments where “an element of moderate, selective skepticism, which will make us watch out for particular sources of error” is warranted. These errors occur at the overlapping of two ideas: first, the extension of the rubric of science into “a vast area which has only an imaginative affinity with them, ... where only the name and trappings of ‘science’ are present;” and second, the recognition that “the attitude sometimes called ‘scientism’—a general veneration for the idea of science, detached from any real understanding of its methods—is at present extremely powerful.” (Midgley 1985, 31)

So, we have two ideological tropes masquerading as science, one centered on the

innate competitive nature of existence, the other a story of eternal progression towards a higher good. In dealing with the first, Midgley moves over now-familiar ground, examining the transition of nature “red in tooth and claw” to that of the selfish gene, arguments that we have largely dealt with above. Later in the text, Midgley reflects on Gaia herself as existing well beyond such considerations:

If she finds her system getting out of kilter because one element in it is insatiably greedy, she simply ditches that element as she has done so many others before. She is not in the least anthropocentric and has no special interest in intelligence. She is in fact impersonal, impartial Nature—not specially red in tooth and claw, but resolute to remain in general green and alive, and therefore liable to cross the projects of those who are acting so as to turn the green, thriving world into a desert. And if this resistance fails, she herself can no doubt be killed with all her children. No universal fail-safe mechanism protects either her or us. (Midgley 1985, 74)

Throughout *Evolution As A Religion*, Midgley remains quite sympathetic towards Darwin himself, and mentions in several places that he found “the idea of a vast escalator, proceeding steadily upwards from lifeless matter through plants and animals to man, and inevitably on to higher things,” to be a “baseless piece of theorizing,” something that he “utterly distrusted.” (Midgley 1985, 38) This is not a novel or controversial position: while perhaps a little harsh in her assessment of Darwin himself, Primavesi makes the same case when she writes that “On the whole, [Darwin’s] attempt to keep the metaphorical *is/is not* balance between the aspects of cooperation (dependence) and competition (struggle) can be seen as a failure, in that the aspect of competition came to play a dominant, and therefore unbalanced, role.” (Primavesi 2000, 53) Certainly, Darwin’s radial bush has little in common with Lamarck’s expanding tree and even less with Spencer’s popularization of evolution as a social theory; more importantly, according to Midgley, “Darwin saw no reason to posit any law guaranteeing the continuation of any of the changes he noted, or to

pick out any one of them, such as increase in intelligence, as the core of the whole proceeding.” (Midgley 1985, 38)

Darwinian evolution is, then, essentially arbitrary but explicitly not random. That is, there are rules to evolution as a process, and there are predictable patterns to which it adheres. But there is no guiding intelligence, no primacy for any particular trait or set of traits. This remains a glaring misunderstanding in the popular culture: giraffe’s necks did not evolve so they could reach the leaves higher in the tree. Instead, a mutation resulted in a longer-necked proto-giraffe. That mutation had a higher survival rate than his shorter-necked brethren, and so became a dominant species. Over millions of years, this pattern played itself out in millions of ways: slightly larger vertebrae here, denser bone foundations there, here a beard, there a different kind of fur on the end of the tail. These mutations *had no purpose*. They just happened, a result of genetic combinations. But they either contributed to a higher survival rate or—and this is, in some ways, the final nail in the coffin of the selfish gene—they had no impact on survival whatsoever, but, through the complex web of inter-connectivity that comprises genetic behavior, were carried along in the wake of other changes which did. To this day, this idea remains profoundly unsettling for some: any individual evolutionary change does not need to be explained teleologically and any individual mutation may in fact be detrimental to the individual, but helpful to the species as a whole (it is hard to construct a world where the birth pattern of the hyena—where the urethra is torn and shredded as the cubs emerge—is “good” for the mother at the individual level; likewise the relationship in most antelopes between scent markings and discomfort: scent glands are often rubbed against trees and flowers *because it helps reduce*

pain and itching, something again that aids the species at the expense of the individual).

The reason for the unsettling nature of these thoughts is inextricably tied to the human tendency to search for meaning in abstract patterns. Without veering too far afield, it is worth noting that we are now brushing against, for example, Pascal Boyer's theory of how religion itself evolved and his ideas of why such pattern-matching behavior might have been evolutionarily beneficial. However, seeing consciousness itself as an evolutionary adaptation is a problematic notion—genetics works best at explaining biological conditions; once it turns towards the realm of behavior, all sorts of complications ensue that, when combined with the projection of what might have happened millions of years ago, lead theorists like Boyer into fascinating territory, but territory whose contours are ultimately a series of “just-so” stories. Whether the capacity for religious behavior reflects an evolutionary capability or a survival advantage or not, we remain left in a situation where certain ideas whose expressions reach their apex in their integration into specific religious ideologies, seem to maintain a surprisingly tenacious hold on our thoughts.

One of the attractions of Midgley's work is that she distrusts the easy way out: here, that is the simple tactic of blaming religion and insisting that the centuries-old notion of the Great Chain of Being is responsible for this particular misuse of evolution.

The simplest explanation, no doubt, would be mere force of habit, the still-surviving toxic effect of Christian conditioning. But that is not a plausible story today. The days of really confident Christian education are simply too far behind us, and the leading myth-bearers are themselves too rebellious, too critical, too consciously and resolutely anti-Christian. ... The power of these ideas still remains to be accounted for. This indeed is often somewhat uneasily recognized, but the explanations given for it tend to be crude and hasty. The matter is too important for this. We need very badly to understand the influences involved. (Midgley 1985, 34)

In considering the situation, Midgley nicely recognizes the complexity of the notion of religion and while her analysis may lack novelty for religious scholars, it is an honest attempt to recognize the impossibility of laying blame at the feet of such an amorphous and protean concept: “religion, like other complex human concerns, seems to be built up out of a wide set of natural tendencies which can be variously combined, so that it itself varies enormously in character according to the way in which we relate them. ... Attempts to eliminate any such main grouping merely scatter its component tendencies in their crudest form to join other colonies.” (Midgley 1985, 34–5)

In an interesting move that recalls our initial chapters, Midgley recognizes that, for most of the community looking at these issues, it is no longer acceptable to give a central place in their thoughts to easily delineated notions of religion or, even worse, God. What, then, serves as a central organizer? What is it that gives these scientific models the authority to make claims about ultimate truths and the direction of progress? Midgley asks, “Is there any *deity* involved, any supernatural creative being? Officially no, but something called Life seems to be filling that role.” (Midgley 1985, 71)

We have come full circle, then, finding ourselves again in an encounter with vitalism, where we seem to be faced with a choice: either we abandon our impulses towards transcendence in light of the failure to successfully create such a system that is compatible with modern rationality or we engage willingly with such a system, with an eagerness to discover its contours and a commitment to maintaining vigilance on the wider meanings we can discover. Remember that for Midgley, separating scientific practice from such teleological concerns is “both psychologically and logically impossible;” (Midgley

1985, 1) her course is clear. There are many destinations if we take that route: Canguilhem's vitalism is one. But there are others, and it is to some of these, and specifically to a notion of ecology and what it may offer in our examinations that I will turn to in the final chapter.

Paganisms, Neo and New

The preceding chapters have meandered across a landscape of American thought that may at moments seem highly fragmented—a valley here and a mountain there, but with little that connects them into some form of landscape. As we look back, I would claim there is a path through the various territories, and gazing over our journey, I hope to reveal it in a more distinct form. We began by examining the notion of nature religion, that is, the segment of religious expression in North America that was concerned with our interactions with and relationship to the external world. This was done first using vitalism as a lens to help locate these traditions within broader cultural critiques and then through a more traditional grounding in the tradition of scholarship known as history of religions. While our focus has been located primarily from the nineteenth century onwards, these ideas have been clearly present in easily identifiable forms as far back as the various cultural streams that combined in this geography can be traced, whether looking at the anthropological and architectural evidence for the practices of people native to this land, to the early ideas expressed by the European invaders, or tracing their history back across the ocean to notions deeply embedded in medieval Europe. With that grounding, two themes were examined, each emerging through considering first a single figure, then another, and then a larger, branching and more discontinuous set of ideas. The first of these themes, that of

nature and our direct experience of it, began with the nineteenth century, Scottish-born American John Muir and the Norwegian Arne Næss; the second theme, that of science and how its discourse mediates our perceptions of the world around us, with the contemporary British scientist James Lovelock and his long-time collaborator, American Lynn Margulis.

These are complex and inconsistent subjects, and our goal has never been to claim that they adhere to a set of identifiable patterns or tropes: instead, nature has been constructed in a multitude of ways with a multitude of forms of expression. The unifying factor of this is the subject, not the manner in which the subject is treated, which has moved from declarations of the Edenic abundance of our surroundings to fearful anxieties of what lurks beyond the edges of our cultivated enclaves in the wilderness.

Throughout all of this, there has also been a strain of thought that has always sought to join a view of the external world of nature with the inner world and with constructions of the self. Importantly, nature is very rarely seen as lifeless and dead: it is, instead, almost always animated, almost always vibrant and it is the elusive pursuit of understanding just how this may work that underpins much of what we've examined. What is it that is alive? What does that definition of the natural share with humanity? Where in the body or the soul or the spirit is such life located?

These questions form a basis for a close relationship throughout the late eighteenth and nineteenth centuries between our explorations and the emerging domains of medicine and medical practices that led to the allopathic revolution, a topic discussed in more detail in the opening chapter. The ever-growing wave of rationalism—which became synonymous with science itself at some point in the last century—threatened to eliminate

any notion of vitalism from the theater of thought in the West. The notion of an invisible, untraceable spirit that made all the difference in who we are was both easy to ridicule and, as important, hearkened uncomfortably to the extravagant notions of ethereal flows of the past. Especially as these notions were just recently dismembered as our understanding of the very small became very large: the more we learned about molecular interaction, about the constant, chaotic movement of chemical compounds all around us, the previously hidden mysteries of air and light and energy and even vacuums became less and less obscure.

This left precious little room for vitalism, and what there was often was couched in language that spoke of “not yet understanding” the role something like the pineal gland played in human development: that is, what was once vital was on the verge of being made mechanical and, hence, reproducible, understandable, and controllable. Things have changed since then. By the second half of the twentieth century, blind trust in mechanistic rationalism had faded significantly, stressed to the point of cracking by both the startling and bizarre claims of quantum physics and by the increased understanding that the relationship between technology and notions of justice, of progress, of a communal or societal good was not at all necessary and, in fact, most variably contingent.

In the interim, vitalism found its home in American environmentalism, most eloquently and spectacularly in the writings of John Muir. It is important not to underestimate Muir’s influence: he was one of the inner circle of individuals who founded the Sierra Club, an organization that has essentially defined the (more or less, depending on your particular perspective) progressive environmental agenda in America for over one

hundred years. This is not to say that Muir and the Sierra Club can be conflated: especially after the failure to save the Hetch Hetchy valley from development, Muir was quite skeptical about political engagement and, in general, about the compromises required when individuals banded together in large groups. This was, in a sense, the flip side of his continued dedication to direct experience, to the notion of an individual dumbstruck with awe in the face of nature's majesty. While Muir himself was most likely to have experienced this state clinging to the side of a glacier in a storm while an avalanche pounded away around him, he was more than willing to allow that others could at least approach that level of appreciation in a more restrained—and safe—manner, although it is hard to envision him approving of passenger ships, replete with rock walls and tennis courts, steaming entire villages of three thousand strangers up the Alaskan coast.

Ultimately, however, Muir and his legacy remain constrained by the excesses of his own romanticism: his vision is engaging, moving, and resplendent. But it is hard to build policy on such sand, as the ratio of extravagance to hard substance is fairly well skewed. As such, as notions of a larger set of environmental concerns increased in their political and social importance, a different set of interpretive tools were required to bridge the gap between calculated science and a sense of animated wonder at the natural world. Into this gap stepped Arne Næss, whose mixture of classically trained philosophic rigor and wide-ranging understandings of nature combined to form the kind of underpinnings needed for what became known as deep ecology to successfully moor itself.

For our purposes, deep ecology did two things: first, it reopened the questions that lead inevitably towards a return in the direction of, if not actually to, vitalism: if we are

examining humanity's role in an interconnected web of related species and environments, what is it, exactly, that unites them? In what way are we "like" the trees or the swamp or the owl? What makes us alive? The second impact of the movement is less precise, and concerns the term "ecology" itself. The concept, of course, is not new: "although the term *ecology* was not coined until the nineteenth century—by Ernst Hæckel (1834-1919) in his *General Morphology* (1866)—it was fundamentally a substitute for the earlier and widespread designation the *economy of nature*. Hæckel himself spoke of ecology as 'the theory of the economy of nature.'" (Livingstone 2002, 345) These roots are important: ecology was originally conceived as a plane of analysis akin to a political economy, a system in which identifiable exchanges could be isolated and comprehensible market forces explained. The invisible hand here was God's own, and nature was "a well-run household under the watchful eye of a beneficent housekeeper." (Livingstone 2002, 346)

As with the other analytical systems of exchange, the notion of ecology was assumed largely to refer to a series of interlocking, mechanical parts that could be isolated, understood, and most of all, improved. Even the connections were commodified: we could create terrariums as part of middle-school science projects and insist that genetically engineered crops over *here* would have no impact at all on the heirloom tomatoes over *there*. There was, of course, always a counter-current to these notions, but it is not overly incorrect (and given the convenience of its chronological relationship to manned space travel, it proves irresistible not) to point to Lynn White Jr.'s "The Historical Roots of Our Ecologic Crisis," published in *Science* in 1967, as a key moment in the opening of a new understanding of ecology itself.

His claim was that environmental devastation had its roots in the Western marriage between science and technology, a union whose intellectual origins predated the scientific revolution. During the Middle Ages, he argued, a profound dislocation in the understanding of “man and nature” had taken place. Instead of humanity’s being thought of as *part* of nature, the human race was seen as having dominion *over* nature and, thus, as licensed to violate the physical environment. (Livingstone 2002, 349)

White’s essay was controversial and misunderstood, but its impact was great, offering a widening of the notion of nature that both brought religion directly into the question and expanded what could be considered as ecological boundaries.

In short, according to this view, the Bible and the religions based upon it adopted an antinature view of the world, a view of the world that postulates a transcendent deity who creates the world but does not invest himself in it in such a way to make it holy or sacred. Critics see the Old Testament opposition to the worship of Baal as opposition to nature worship by followers of the new biblical deity, who transcends nature and is not to be confused with it. Because of this Old Testament bias against nature, critics say, Christianity was predisposed to a desacralized view of nature that laid the foundation for scientific and technological manipulation of nature. (Kinsley 1995, 104)

This new space was rapidly filled by thinkers like Næss, who were all too eager to find a popular voice—remember, *Science* had a much larger readership in the 1960s than today—that seemed, even vaguely, supportive of their core notions.

I want to take a step back and retrace some of our steps, focusing this time on the direct relationship with religious thought and practice: it is easy to lose that dimension of our explorations, allowing it to slide just below the surface. This may be ascribed to many factors, from the general growing secular tide which doesn’t elide religion so much as help submerge it into other concerns to the fact that very few of our subjects themselves write directly about religion, although many of them express at length various opinions about what might be termed spiritual matters.

Burning Wicks: The Shadows of Religious History and the Light of Science

*History is neither a perpetual novelty, nor a perpetual repetition, but the
unique movement which creates stable forms and breaks them up.*

Maurice Merleau-Ponty, *Phenomenology of Perception*

It is important, I think, to engage seriously with the fact that most of the subjects of the preceding chapters would, more or less vehemently, protest against their inclusion under an umbrella labeled “religious thought.” For some, religion is seen as a separate domain from that of their concern, for others it is more or less explicitly seen as an antithetical realm, as that which they are actively working against. Still others make somewhat subtle differentiations, isolating “bad religion” from “good.”

As an example, take Carl Sagan’s *The Demon-Haunted World: Science as a Candle in the Dark*, initially published in 1995, just a year before his death. Sagan has appeared in the margins of previous chapters, as Lynn Margulis’ first husband and the father of her frequent collaborator, their son, Dorion Sagan and also as a staunch supporter of James Lovelock at times when the influence of so large a public figure was desperately needed. Published at a time when he was, along with evolutionary biologist Stephen Jay Gould, perhaps one of the two pre-eminent popular writers on science in America, *Demon-Haunted World* was partially co-written with Sagan’s third wife, Anne Druyan. This was not unusual: Druyan is listed as a full co-author on two other of Sagan’s publications from the latter years of his life, as well as two volumes that appear posthumously. While not a

capstone to his career in any sense, it was published in the midst of a multi-year battle with myelodysplasia which eventually resulted in Sagan's death from leukemia, a fight he knew he would eventually lose.

The call to popularizing science rises naturally for Sagan:

The romance of science remains as appealing and new as it was on that day, more than half a century ago, when I was shown the wonders of the 1939 World's Fair.

Popularizing science—trying to make its methods and findings accessible to non-scientists—then follows naturally and immediately. *Not* explaining science seems to me perverse. When you're in love, you want to tell the world. This book is a personal statement, reflecting my lifelong love affair with science. (C. Sagan 1996, 25)

Sagan's enemy in *Demon-Haunted World* is pseudo-science, but religion is always lurking on the edges and, while he is careful to “acknowledge at the outset the prodigious diversity and complexity of religious thought and practice over the millennia; the growth of liberal religion and ecumenical fellowship during the last century; and the fact that—as in the Protestant Reformation, the rise of Reform Judaism, Vatican II, and the so-called higher criticism of the Bible—religion has fought (with varying degrees of success) its own excesses,” (C. Sagan 1996, 20) his allegiances are quite clear.

Still, the relationship is complicated, as exemplified by a more thorough examination of the source of the subtitle of the book itself, which comes from a tract published in 1656 by Thomas Ady, a British physician and philosopher. Sagan summarizes Ady's goal as to attack

the witch hunts then in progress as a scam “to delude the people.” Any illness or storm, anything out of the ordinary, was popularly attributed to witchcraft. Witches must exist, Ady quoted the “witchmongers” as arguing—“else how should these things be, or come to pass?” For much of our history, we were so fearful of the outside world, with its unpredictable dangers, that we gladly embraced anything

that promised to soften or explain away the terror. Science is an attempt, largely successful, to understand the world, to get a grip on things, to get hold of ourselves, to steer a safe course. Microbiology and meteorology now explain what only a few centuries ago was considered sufficient cause to burn women to death. (C. Sagan 1996, 26)

Ady's primary concern is that the witch hunts mark a falling away from faith, a moment when people are "ascribing the Work of God, to a Witch, or any mean Creature rather than to God." Ady is quick to recognize the reality of witchcraft, stressing that his concern is the misinterpretation of events and the radical expansion of the category: for him, the issue is not whether or not witchcraft exists, but rather "that Witches are not such as are commonly executed for Witches." (Ady 1656, 2) While Sagan does recognize that Ady's text is "largely Biblically based," (C. Sagan 1996, 26) this is akin to saying that Sagan's work is "somewhat based on observation." Ady is most of all concerned with examining the question of witchcraft through the correct methodology: "setting aside all such unscholar-like way [sic] of arguing, I desire all to argue by the Scriptures, and I will answer, or to answer by the Scriptures, and I will argue by the Scriptures." (Ady 1656, 9)

At this point, it is useful for a moment to flip back a few pages in *Demon Haunted World* to a moment that stands out in the text. Sagan's book does not contain all that many footnotes, and most are standard fare: explanations, extended quotes, additional context and the like. In a few places, he uses the footnotes to add personal anecdotes, and here he uses one to challenge a proposed revision to his draft text (and, in so doing, may offer a glimpse at the side of his personality that was famously difficult to work with). The primary text reads, "To discover that the Universe is some 8 to 15 billion and not 6 to 12 thousand years old* improves our appreciation of its sweep and grandeur." (C. Sagan

1996, 13) The footnote, in full:

“No thinking religious person believes this. Old hat,” writes one of the referees of this book. But many “scientific creationists” not only believe it, but are making increasingly aggressive and successful efforts to have it taught in the schools, museums, zoos, and textbooks. Why? Because adding up the “begats,” the ages of patriarchs and others in the Bible, gives such a figure, and the Bible is “inerrant.” (C. Sagan 1996, 13)

This is Ady’s exact position: *A Candle in the Dark*’s substantive text begins with a long, enumerated list of twenty concerns regarding witches and witchcraft. A sampling, separated by paragraphs for easier reading:

- 1 Where is it written in all the old and new Testament, that a Witch is a murderrer, or hath power to kill by Witchcraft, or to afflict with any disease or infirmity?
- 2 Where is it written, that Witches have Imps sucking of their bodies?
- 3 Where is it written, that Witches have biggs for Imps to suck on?
- 4 Where is it written, that the Devill setteth privy marks upon Witches, whereby they should be known or searched out? or that any man or woman hath any mark upon their body any more than natural, or by some disease or hurt, which is preternatural?
- 5 Where is it written, that the tryall of a Witch should be by sinking or swimming in the water? or by biggs or privy marks, or suspition of people, to be signes of a Witch?
- 6 Where is it written, that Witches can hurt corn or cattell, or transport corn by Witchcraft, or can fly in the aire, and do many such strange wonders?
- 7 Where is it written, that a Witch is such a man or woman that maketh a league with the Devill, written with his or her blood, and by vertue of that covenant to have the Devill at command?
- 8 Where is it written, that any man or woman was called in the Scripture strix, or lamia, or where is any word of such signification or importance, either in the Hebrew text, or in the Latin translation, where is a Witch said in the Scriptures to be any such kind of person?
- 9 What is a witch in the scripture sense, according to Deu.18.10,11 where all sorts of witches are nominated by nine terms of description?
- 10 Where is it written, that there are any other sorts of Witches than such as are there described? Deut.18.10,11.
- 11 Where do we read of a he devill, or a she devill, called incubus or succubus, that useth generation or copulation with Witches, or Witches with them? (Ady 1656, 10–11)

Here, Ady switches tactics: having outlined a set of questions that he claims are not to be found in the holy scripture, he moves to examining what is actually put down regarding the

subject of witches, and of theodicy in general. A sampling:

13 It is written, the Lord hateth the hand that sheddeth innocent blood, and the fals witness that speaketh lies, and the feet that are swift to do mischief, and a heart that deviseth wicked imaginations, Pro.6.17 18,19.

14 It is written, shall there be evill in a City and the Lord hath not done it? ...

18 It is written, Thou shalt not raise a false report: put not thy hand with the wicked to be an unrighteous witsesse, Exodus 23.1.

19 It is written, If ye any way afflict the widdow or the fatherlesse, and they cry at all unto me, I will surely hear their cry; and my wrath shal wax hot, and I will kill you with the sword, and your wives shall be widdows, and your children fatherlesse, Exodus 22.23,24. (Ady 1656, 11–12)

Ady's argument is exactly what Sagan refers to in his footnote: the Biblical record is the absolute and inerrant truth, and if you are unable to find indication of the specific kind of witchcraft you are facing in that record, you are in danger of a most horrible sin, that of miscategorizing something as belonging to Man's domain which really belongs to God's: "how dare ye teach for doctrin, the traditions of Antichrist that are not written in the Book of God? Whether do not some preferre the mad imaginations of Cornelius Agrippa and others, before the Scriptures, for the defending their opinions?" (Ady 1656, 12)

The bulk of Ady's text is a detailed exegetical exercise, working through the definition of witchcraft offered in Deuteronomy 18:10-11 bit by bit, a process that requires detours through identifying what signs are appropriately open for interpretation when foretelling the future; differing between various types of dreams and prophecies in order to isolate those sent or approved of by God from those that are human creations from those that are the work of diabolical forces; distinguishing between the dangerous and false teachings of astrology and appropriate wonder at God's extra-terrestrial creations, as well as the times in the Biblical record where astrological signs are taking as true communications from God; examining the notion of falsehood as it relates to prophetic

claims or to natural occurrences that remain hard to comprehend which necessitates a distinction between a misinterpretation and an intention to deceive; and providing a long inventory of common deceptions and scams used by individuals at fairs and public gatherings, and then explaining how these behaviors are perfectly harmless and, indeed, may be used as part of a methodology of exposing the truly dangerous magicians, the “juglers” mentioned throughout the text.

All of that only brings us through Ady’s fifth Biblical definition of witchcraft. For an historian of religion, there is much more of interest, including detailed explanations of the evil dangers of both “the secret Impostures of the Popish Religion, which is altogether upheld by Witchcraft” (Ady 1656, 46) and “Mahomet, the great Idol of the Turks, who by his Juglings and Divinations hath seduced a great part of the World to an Idolatrous worship, so absurd and silly, that his Disciples are ashamed to let any Christians come near the place of his supposed Sepulchre at Mecha, lest they should laugh at their folly in worshipping an Iron Sepulchre.” (Ady 1656, 47–8)

And yet, in some ironic methodology, Sagan and Ady remain closer than perhaps either of them would be comfortable: there is, in both thinkers, a dogged insistence on there being a single, infallible source of truth and a profound level of concern at the effects on the world if this source continues to be ignored, misinterpreted, or used inappropriately. The fact that the inerrant truth of the Bible is Ady’s foundation, while the scientific method provides Sagan his, serves to join the two, not to isolate them. As in previous chapters, we are in a position where the insights of David Hess come in handy, with his focus on the borderlands where groups negotiate their boundaries and articulate their points of

engagement. Drawing heavily on late-twentieth century theories of anthropology and the admittedly nebulous “cultural studies,” he insists that these areas serve to co-create a shared culture that defines the worlds on all sides of the discussion. Hess claims that,

beyond the surface of charges and countercharges of pseudoscience, of positions staked out and defended as more or less “true” knowledge, and of orthodoxies and heterodoxies, they are also forging a shared culture. It is not political and self-conscious enough to be called a counterculture, but this emergent paranormal culture is enough “beyond” (para) the mainstream that I think of it as a “paraculture.”(Hess 1993, ix-x)

The most salient part of Hess’ work for our current consideration is his notion of co-creation, of the shared responsibility of all engaged parties in the delineation of the contours of engagement. In the specifics under consideration, that shaping often takes the form of a statement made from the point of view of the defender of science that boils down to “I’m scientific, you’re irrational,” (Hess 1993, 32) but the “boundary-work,” a term Hess inherits from Thomas Gieryn, remains a collective effort.

Importantly, this boundary work needs to be envisioned as something mutually engaged rather than two sets of contrary forces building fortifications on opposite sides of a contested area. Instead, they are often working together, digging tunnels side by side, grudgingly or enthusiastically accepting each other’s tools, even changing sides with startling swiftness on specific issues. In the specific domain Hess examines, the most stringent scientific requirements for the proof of paracultural activity are often offered by the side that defends its existence, not the side of conventional science. The distance of history makes these complex interactions even more apparent, allowing Sagan, in his attacks on pseudoscience and what he sees as the active role of the church in limiting the spread of the truth of science, to use thinkers who not only were explicitly supportive of a

Biblical interpretation we would not hesitate today to label as literal fundamentalism, but were also very suspicious of the same forces of light and truth that Sagan associates with the Enlightenment and the expansion of science.

This is clearly true for Ady: he is arguing directly with an active social movement that is engaged in scouring the British countryside, locating, judging, and (usually) killing significant numbers of (mostly) women. (The exact numbers are a matter of stiff debate, a topic we will return to below. The bottom line is that witch persecutions were a real and present danger over much of Europe for several centuries.) *A Candle in the Dark* is a call to return to what he sees as the rational discourse exemplified by Reginald Scot's *The Discoverie of Witchcraft* which, for Ady, provided a perfect model of contemporary rationalism in its use of Biblical precedent to answer nearly all questions combined with an assumption of human fallibility and susceptibility to illusion to address the rest: Scot's work methodically isolates what witchcraft *really* is, that is, what is allowed under that rubric Biblically, and then explains the various illusions and manipulations that are used by common tricksters in such detail that his text was often plagiarized, excerpted, and repackaged as manuals for eighteenth and nineteenth century stage magicians. Ady's devotion to Scot is also reinforced by their shared hatred for Catholicism, seen by Scot as the ultimate source of the deceptions involved in the maintenance of superstitious belief.

Sagan mentions Ady three times in *Demon Haunted World*. The first, where he speaks of the inspiration for the title of the text, we have already discussed; the second is a brief footnote where a quote from Ady is presented as a marginal correction to a long list of "typical offerings of pseudoscience and superstition;" (C. Sagan 1996, 221) and the final

occurs in a chapter, promisingly entitled “Science and Witchcraft.” It is, like much of Sagan’s encounters with pseudoscience, less deeply engaged than anticipated, focusing on a parallel between the mistakes made in witchcraft persecutions and those made in the Nazi regime and closing with a call for scientists to remain ever-vigilant: “the unprecedented powers that science now makes available must be accompanied by unprecedented levels of ethical focus and concerns by the scientific community—as well as the most broadly based public education into the importance of science and democracy.” (C. Sagan 1996, 419)

Ady here serves a secondary role to Friedrich Spee, whose *Cautio Criminalis* (1631) is quoted at length, covering just over five pages of Sagan’s text. This is unsurprising: Spee’s writing is much more friendly to the modern scientist, inventorying as it does the details of the treatment of the accused witch at the hands of the church, instead of the theological arguments against their being seized in the first place. Still, even Spee’s text opens with an affirmation of the existence of witches: he is arguing most vehemently against the violence and inhumane treatments inflicted on potentially innocent people.

The eventual decline of these occurrences is attributed to a notion of progress that neatly and explicitly joins science and economics: having explicitly cited Spee, Ady, Scot, and a handful of others who wrote and acted in protest of the witchcraft persecutions, Sagan writes, “because of the courage of these opponents of the witch mania, its extension to the privileged classes, the danger it posed to the growing institution of capitalism, and especially the spread of the ideas of the European Enlightenment, witch burnings eventually disappeared.” (C. Sagan 1996, 413) In case there is any doubt as to Sagan’s analysis, he continues:

The witch mania is shameful. How could we do it? How could we be so ignorant about ourselves and our weaknesses? How could it have happened in the most “advanced,” the most “civilized” nations then on Earth? Why was it resolutely supported by conservatives, monarchists, and religious fundamentalists? Why opposed by liberals, Quakers, and followers of the Enlightenment? If we’re absolutely sure that our beliefs are right, and those of others wrong; that we are motivated by good, and others by evil; that the King of the Universe speaks to us, and not to adherents of very different faiths; that it is wicked to challenge conventional doctrines or to ask searching questions; that our main job is to believe and obey—then the witch mania will recur in its infinite variations down to the time of the last man. Note Friedrich von [sic] Spee’s very first point, and the implication that improved public understanding of superstition and skepticism might have helped to short-circuit the whole train of causality. If we fail to understand how it worked in the last round, we will not recognize it as it emerges in the next. (C. Sagan 1996, 413)

There are, of course, more sophisticated and complex explorations of the witchcraft persecutions, but Sagan’s blurring over the details of the historical analysis is not really the point here. In fact, it seems important to note that, in general, Sagan gets it right. He is just highly selective about the evidence he accepts and the parts of his sources that he ignores, and the mesh of that filter is nowhere so fine as when issues of religion rise to the top. For Sagan, despite his protestation to the contrary, religion—at least the historically understood, largely Christian phenomenon—is in active opposition to science. Or, more properly, *was* in active opposition: the battle is over and part of his puzzlement is why it has taken so long, measured in centuries, not years, for the vanquished foe to skulk off into the shadows. As ever, Sagan’s triumphalism is worn proudly on his sleeve: “Science is far from a perfect instrument of knowledge,” he claims. “It’s just the best we have.” (C. Sagan 1996, 27)

Holisms and Ecologies: Offerings of the New Age

The specifics differ, but the shape of the argument is consistent across many of the subjects we've examined: most would protest at some form of the dimensions of our analysis. Either they see religion as something foreign to themselves, an "other" that lives across some unfathomable chasm; or they see the practice of science, if not the science itself, as something that is similarly outside their claims, or even in conflict with their teleology or methodology. In briefer treatment than with Sagan, Midgley—for all her acceptance of the religious dimension of life and, especially, of certain modern manifestations in which she finds hope—remains utterly rational and indisposed to engaging deeply with a notion of personal experience or of transcendence; Næss reduces religion to a "Level I Ultimate Premise," a set of "verbalized fundamental ... ideas and intuitions," (Næss 1995b, 10–2) that defines the approach to his socio-psychological schematic diagramming of human behavior; Lovelock and Margulis, while occasionally roped into more friendly sounding language for a review blurb or supportive quote, are at their core traditional scientists, fully committed to a stabilizing and predictable rationalism, and certainly not particularly open to expressive and expansive forms of mysticism. The exception to all of this is Muir. Of the figures we have considered, Muir insisted—passionately, soaringly, and oftentimes excessively insisted—in the unity of it all, in the ultimate collapse of everything he experienced into a natural Godhead that manifested itself in moments of direct communion with the environment that, for him, never fell into conflict with a deeply engaged scientific curiosity.

This holism points towards what I mean throughout the rest of this chapter by the term *ecology*. There is a significant point of difference that requires some attention in this definition: ecologies are explicitly *not* undifferentiated. They are zones of diversity, areas of complex interaction on both individual and systemic levels: monocultures are, in the end, neither sustainable nor ecologies. In this sense, Muir himself remains a problematic figure: his detailed observations of the complexity of the environmental milieus in which he roamed are strikingly ecological, ranging across scope from the smallest insects to the slow movements of glaciers themselves. But when he collapses all of that into a set of revelatory insights into God's natural plan, his vision flattens, threatening to eradicate the complexity of what he has observed.

This is a difficult position, and one whose tension will ultimately remain at least partially unresolved. In the presence of traditional religious discourse, there almost always seems to be an impulse towards totalizing explanations, towards some form of reductionism. Many would argue that not only is this part of religion's role, it is also a desirable and good thing: providing a unified set of explanations for diverse phenomena is part of the functional purpose of religious behavior and that the reduction of the minutiae of earthly concerns to a set of sacred concerns—whether subsumed under “God's will” or the interaction of a pantheon of benevolent and demonic forces or the unfolding of an eternal narrative with yourself as the key player—is a key component of how we are supposed to navigate the world in which we live.

The difficulties with these positions have been exposed above, and are repeated in a variety of contexts under a variety of guises. They boil down to a recognition of true

diversity, of multiple possibilities, of the presence of complexity that freely spills over into chaos, whether this is viewed through the lens of analyses of globalization or that of the last century of physics or that of the broad family of theoretical discourses lumped under the rubric of the postmodern. In this, of course, lurks the danger of easy apocalypticism: it is essentially trite for a generation to insist that, at last, the key to solving the problems of a specific domain are here, all that is needed is a revolutionary shift in how we think about things. That said, at a minimum, there is something in all of this that presents a strong challenge to modes of thought that are unable to embrace the multiplicity that is required without collapsing it back into a familiar singularity.

If this notion of holism is, as I believe, important to successfully understanding and responding to scientific, ecological, and spiritual issues in the twenty-first century, it is worth spending some time exploring what contemporary movements may have more or less successfully negotiated its difficulties. In doing so, we will revisit one group introduced in depth in an earlier chapter, and examine two more that are often—quite incorrectly—grouped together under a single rubric.

The first is the deep ecology movement, discussed above with respect to its formation under the direct influence of the ideas of Arne Næss, which would seem a logical place to look for a continuation of Muir's ideas. Certainly, deep ecology is heavily informed by early American environmentalisms, and, at the level of content, preserved a direct continuity with those movements. deep ecology, however, turned very heavily towards philosophy and towards the need to construct a way of understanding ultimate meaning without resorting to religion itself. This is a rich and valuable set of conversations

(which, of course, occasionally move beyond learned debates and into academic internecine warfare), and are well worth both scholarly and public attention; they also move deep ecology into a different realm, one focused on the reasoning required to join environmental concerns both to broader political action and to individual questions of behavior and morality.

In this, they somewhat mirror Anne Primavesi's treatment of Gaia which similarly takes a set of insights as its inspiration and then works on those ideas with a set of sophisticated philosophical tools, constructing in the end something that is neither pure philosophy nor entirely consistent with the source material. This is admirable and artistic and often quite beautiful; but it is not, at least in the sense I am using it, a move towards ecology.

If the turn towards philosophy obscures our search, one place to look would be the New Age, never accused of being a movement particularly obsessed with rigor of thought. Immediately, there is a difficulty however: the question of what, exactly, constitutes the New Age has been an issue of academic study for over thirty years now, with no clear consensus in sight. Wouter Hanegraaff, whose encyclopedic *New Age Religion and Western Culture* is required reading for anyone truly interested in this definitional question, offers an initial division of an "early, idealistic movement as *New Age sensu strictu*," (Hanegraaff 1998a, 97) and a later, wider set of practices that he terms the *New Age sensu lato*. This distinction is useful for separating out the utopian apocalypticism that marked the *New Age sensu strictu*, but it proves quite cumbersome especially when—as ours is—the interest is on various strains of the New Age within the *New Age sensu lato*.

At its broadest, Mary Farrell Bednarowski provides a representative exemplar when she writes that “‘New Age’ has come to refer to an amorphous group of ideas and religious movements concerned with an evolving higher consciousness in humankind.”

(Bednarowski 1989, 15) It serves as a definition, but it fails to provide much meat for deep engagement or thick description and, as importantly, does not meet the compelling challenge made by Sutcliffe when, considering the same question of defining his subject matter, he insists that “some definitions, reconstructions and genealogies are simply more plausible than others.” (Sutcliffe 2003, 4) The best attempts have been able to identify loci of concern that can be seen as shared among affiliated movements, parabolas of thought that connect diverse and disparate practices into loose aggregates that can then be dealt with as continuous, similar expressions of concern. This kind of definition, of course, has proven attractive as well to a certain understanding of post-modernism which can find notions of pastiche, bricolage, and assemblage rife in the universe of the New Age. As an emic example, the following extended exchange between a member of the audience and David Spangler at a Lindisfarne Association seminar in the summer of 1988 should suffice:

AUDIENCE PARTICIPANT: You mentioned a concise definition of the New Age. What is it?

DAVID: You mean this weekend isn’t concise enough? Well, if I had to put my definition into a few words, I would say that the New Age is four things. First, it is the emergence of a planetary culture. This doesn’t necessarily imply the emergence of a world government, by the way, which is something I don’t expect to see or particularly desire. However, a greater global awareness, cooperation, and coordination on the parts of all people and institutions, with particular mindfulness of how we are all interconnected and interdependent, is important.

Secondly, I would say that the New Age is a response to the archetype or myth of the sacred planet. It is the desire to create a world in which humanity, nature, and

the domain of spirit work together in ways that are mutually empowering and co-creative.

Thirdly, I would say that the New Age is the *gestalt* of our technological, scientific, political, economic, social, and spiritual responses to both the global challenges and global opportunities of our time. It is the spirit behind those responses that minimizes or eliminates the danger that we will destroy ourselves and our world and maximizes the possibility that through a greater planetary awareness and shared planetary culture we will further the emergence of the sacred world.

Finally, the New Age is an evolutionary shift within the life and spirit of the Earth itself. Just as human puberty brings hormonal shifts, rebalancing, and the emergence of new potentialities and capabilities, so there are shiftings, rebalancings, and emergences going on within the subtle or spiritual body of the Earth. New “energies” and qualities are being taken on, and older ones are being let go of. The Earth as a being is forming a new pattern of inner relationships with the cosmos. This, of course, is a definition based on my inner perceptions. (Spangler and Thompson 1991, 57)

A note before we continue with the conversation: this definition, while clearly not universally accepted, does nicely tie together many of the concerns I have examined so far: globalization, Gaia, the relationship with technology and science, and a dollop of oddly positioned evolutionary assumptions. I include the follow-up question and response largely because of its echo of our earlier discussion of how boundaries are negotiated between and among groups that share a common milieu and how various groups frame their own rules for inclusion and exclusion.

AUDIENCE PARTICIPANT: I notice you did not include anything relating to UFOs, psychic phenomena, channeling, or the like in your definition. I take it you do not consider these things to be New Age.

DAVID: Not in themselves, no. Exploration and intelligent clarification of our psychic abilities, or a genuine connection with deep realms of the personal, collective, or planetary soul, can certainly enhance the kind of holistic awareness that I associate with the New Age. Psychic phenomena can be experienced within a New Age context, but simply pursuing channeling or crystal-ball reading or the occult arts of any kind is not what I would call New Age. For one thing, these phenomena have been around for centuries. In our culture, we have tended to repress or forget them; therefore the so-called occult and esoteric revival going on now is more a remembrance than a wave of the future. It is the surfacing of

repressed ideas and images, which can be healthy if we don't just romanticize the phenomena or become too credulous. The current interest in occultism can serve a purpose, but it can also deflect us from the real work to be done, and at times it can be confusing and harmful when experienced outside of a properly prepared cultural context. My image of the New Age is not one in which everyone becomes imbued with psychic powers but one in which we gain a compassionate and planetary awareness. (Spangler and Thompson 1991, 57–8)

This kind of definition, however, makes it quite difficult to engage more specifically with the notion of the New Age at a level that is more generic than a specific practice—say crystal healing—but less abstract than the entire umbrella term. Importantly, the New Age—as a generic term—is not new. Echoing much of Albanese's thought discussed in chapter two, Leigh Eric Schmidt recognizes in *Restless Souls* that, “the American fascination with mountaintop mysticism and seeker spirituality goes much deeper than any generational fixation allows.” (Schmidt 2005, 2) Indeed, the work over the past two decades shows a continuity between the commonly understood New Age, which dates from sometime in the 1960s in the United States of America and a little later in Europe, has easily recognized roots in various other forms of American spirituality (Theosophy, Spiritualism, various forms of positive thinking that moved in and out of more mainstream religious moments), magic-oriented revival movements in Europe who themselves emerge from various Germanic and English Romanticisms, and a host of earlier religious trends. A wide variety of individuals are often referenced, with lists dominated by Madame Blavatsky and Alice Bailey, but also including—using Sutcliffe's inventory as representative— “Aleister Crowley, Carl Jung, P.D. Ouspensky, Rudolf Steiner, and G.I. Gurdjieff.” (Sutcliffe 2003, 53) A step back may be in order: we asked this question not to define the New Age, but to offer an evaluation of it in terms of its relationship with what we are calling “ecology.” As such, the preceding discussion should

suffice to at a minimum help identify the contours of the New Age, especially keeping in mind Peter Beyer's recognition "that few if any of these groups are highly institutionalised and therefore clearly identifiable and circumscribable," (Beyer 1998, 17) and we may safely leave a discussion of the location with respect to its boundaries of this specific movement or that particular activity to others. Instead, I would offer two arguments against seeing the bulk of the New Age as ecological.

First, the original New Age (Hanegraaff's *New Age sensu strictu*), the movement whose roots are explicitly in the Findhorn community in the United Kingdom, and whose development since then has remained consistent with those concerns, remains an almost entirely mental exercise. As has been noted elsewhere, the brilliant theoretical move made here is the relocation of the apocalypse from the external world to the internal: we are no longer facing "the destruction of the planet at a fixed point in time, but the death of the insensitive, rationalistic ego in an ongoing process of human growth." (Sutcliffe 2003, 102) We have shifted from the destruction of humanity through a physical threat of fire or ice (or any of their meteorological or biblical variants) to an apocalypse of consciousness, a moment when humanity's self-conception and/or psychic abilities will be reborn into a new era. This age of understanding and peace, however, seems located almost entirely internally: this New Age, at least, remains largely an otherworldly, transcendent movement. Both Sutcliffe and Hanegraaff make much of this tradition, and while such a distinction is academically useful, it works against our desire to look more closely at the variety of movements that combine into the common understanding of the term.

At its best, this collection of movements and practices has enabled a long series of

moments of personal empowerment, of people finding space and strength to encounter, speak of, and claim their own experiences and their own truths in areas that are both personally meaningful and where they may have experienced profound moments of oppression and silence. The narratives of people being drawn to a collection of New Age practices because “there was no room for me in the church,” are endless (and often endlessly compelling). Similarly, the insistence in many New Age practices that we are each the sole authority on our own experience remains simultaneously liberating and problematic. The liberating nature of the claim towards auto-expertise should be obvious; the difficulties manifest in two flavors. At the practical level, the New Age community does indeed have preferred practices, preferred modes of interaction and preferred discursive rules and rituals; as such, our personal experience is often validated not solely by our own claim to expertise but also by its conformity with the norms and expectations of that community. This may be seen as a reflection of the second level at which this issue operates: it is unclear how theoretically to encapsulate any true discourse within a context of auto-expertise. In this, the New Age—often with an innocent naïveté that belies its half a decade of history and study—is recapitulating an age-old philosophical issue and in doing so essentially dismissing any substantive alternative to Descartes: there is little difference between *cogito ergo sum* and *I create my own reality*. Consider the following from David Spangler:

Whether we should say “I am God” or not depends for me on whether our imagination is oriented towards particles or waves. That is, what do I mean to myself when I say I am God? If I think of myself in a particulate, separative way, it can be a profoundly narcissistic thing to say, affirming my own particlehood at the expense of everyone else’s. It can diminish my capacities for compassion and inclusiveness, and thus diminish my access to my incarnational imagination.

I observed this statement emerging in the sixties out of the human-potential movement, along with its counterpart, “We each create our own reality.” To me, this was an attempt to counterbalance feelings of repression, disempowerment, and unworth, often fostered by misapplied religious fundamentalism. Thus, when people say they are God, they are not making a theological statement as much as they are making a statement about their self-worth and their power by invoking the image of that which in our culture is of highest worth and greatest power. They are trying to say, it seems to me, that they are safe, they are powerful, they are creative, and they can do what they wish in spite of a confining, repressive world around them.

My response is that this is like using a nuclear bomb to dig a hole. It will do the job, but what a fallout! I can simply affirm that I am a capable, valuable person and then take actions that will confirm that image. I can incarnate an image of capability more easily than one of being the divinity. In the long run, images of being God could lead to disempowerment rather than the other way around as I discover that the universe doesn’t always agree that I am *el supremo*! (Spangler and Thompson 1991, 149–50)

Spangler is clearly sympathetic to these utterances, but his critique still opens the door to a set of philosophical tensions that the New Age generally fails to recognize or, as in Spangler’s case, fails to address adequately. Hammer summarizes well:

Contradictions are an inevitable outcome of the pluralism of opinions within the New Age. However, the existence of mutually incompatible claims often appears to go undetected, or is at least left unmentioned. Thus, there are three beliefs inherent in common versions of New Age religion that are, if not contradictory, at least very hard to reconcile. Firstly, the individual soul is said to choose its future rebirth, guided by the principle that each living entity needs certain experiences in life. Secondly, New Age writers generally accept the concept of an overarching plan, according to which a law of supernature integrates seemingly disparate events into a meaningful whole. Thirdly, the strong influence of American positive thinking has fostered the belief that we actually create our own realities in the here-and-now. The tension between personal will, the self-created nature of the universe and the existence of a cosmic plan is seldom if ever discussed. When New Age writers address the question of inconsistency, one is generally presented with a subjective (or pragmatic) conception of truth. The general rule is “believe it if it rings true.” If there are two or more mutually incompatible statements, accept the one that feels subjectively true. (Hammer 2003, 413)

This ties directly into both of the most commonly leveled critiques of the New Age, its narcissism and its deep entanglement with late industrial capitalism, perhaps most succinctly and skillfully summarized in Michael York’s notion of a movement struggling

with the tension between “a numinous materialism and a world-denying idealism.” (York 1994, 16). Both of these have been dealt with in great depth and with great analytic skill elsewhere; here I would merely highlight (in addition to flat-out denying readings based, for example, on Christoph Bochinger’s claim that the entire movement may be reduced to a scheme designed to sell more books) that the intricate commingling of capitalism with New Age is not necessarily as severe a critique as, for example, Roof or Carrette and King offer. Instead, it is possible to see the New Age as *no less* complicit with the dangers of the globalized, post-industrial world than any other group beyond a certain scale. (Roof 2001; Carrette and King 2004; Ezzy 2001; T. G. Foltz 2005). Indeed, if you look at Sutcliffe’s following description of the progression of the New Age through a slightly different lens, it can be read as, instead of a specific genealogy, more of a general exemplar reflecting the mechanisms of late capitalism:

the spiritual bricolage practiced in the counterculture of the late 1960s and early 1970s has remained the staple strategy of spiritual seekers up to the present day. With certain obvious lifestyle exceptions—drug use ..., flamboyant dress, de-inhibited language and deportment—it is also characteristic of the more ascetic and disciplined behavior of the “New Age” pioneers in the 1950s and early 1960s. What has changed in each instance is the legitimacy of the cultural identity assumed by exponents. To map this crudely, we can say that in the early period, this identity was implicitly subcultural ... In the middle period, the stance becomes countercultural: dissidence is still proclaimed, but the processes of wider cultural change ... have the effect of removing adherents from social quarantine and deploying them on a wider popular front of social and generational resistance to the *status quo*. In the final phase the grand narrative of “alternative” culture as distinct, even pure, contestatory force collapses as its rhetoric of difference and prescriptions for change are recuperated by popular culture for consumption in the self-service cafeteria of contemporary spirituality. (Sutcliffe 2003, 111)

While the most relevant part is the final sentence, the movement from the isolation of the underground to the community of resistance to a commonly available commodification is one to preserve as we move forward. Additionally—and against the facile analysis of the

New Age as merely (yet another) example of consumerism run rampant—it is important to keep in mind that this very process is met with suspicion and downright hostility from inside many of the movements and traditions involved. Spangler describes concepts being “minced and mulched, largely by a media that predigests ideas for us and turns them into sweet, syrupy clichés that hold little nutrition.” (Spangler 1991, 48) This process is later explicitly tied to the marketplace when he decries the “endless rounds of weekend workshops and seminars, endless trainings, endless preparation and excitement and self-discovery, but never any self-definition or incarnation. I found myself in an atmosphere more suited to an entertainer than a spiritual teacher. Today’s insights always had to compete with the newer, brighter, improved insights of the next seminar to come down the pike.” (Spangler 1991, 51) And finally, Spangler hones in on the exact phenomenon under consideration, going so far as to insist that, to the degree with which late capitalism is operative, we are explicitly working in ways that are fundamentally antithetical to the New Age itself:

one of the phenomena of the New Age landscape is the proliferation of “prosperity” workshops and seminars that seek to teach us in a quick, painless way how we may control our reality and have all the abundance we want. While these workshops are filled with what their proponents call New Age concepts and ideas, and while they would seem to promise a new life, many of them actually occupy very old and familiar territory. They are planted four-square within the same consumer mentality that bedevils much of our culture. Their hidden message, which in some cases is quite explicit, is that you really can have it all. The New Age, it is imagined, is about gaining the power to have whatever you need and desire, it is about getting your way, because, after all, it *is* your reality. Nothing is said, though, about reciprocity—that if you can have it all, then the *all* can have you. Instead, in these workshops, you are always the consumer, never the consumed. It is as if you have one of those marvelous metabolisms with which you can eat anything and everything and never gain a pound or an inch. When your attention is on what you can get and not on what you can give, what you really end up with is a bad case of spiritual anorexia.

Limitless consumption without consequence or just plain limitlessness without boundaries is having a devastating affect [sic] upon our moral, social, and ecological landscapes. It is part of the modern attitude that the New Age is trying to change; it should not be made an attribute of the New Age itself. When it is, we are boldly going back to where we've been before. No transformation, no metanoia, no emergence, no imagination, no New Age. (Spangler 1991, 53)

It may indeed be possible to imagine a common ground between the ecological concerns discussed above (both in terms of physical ecologies and in terms of the holistic mode of thought) and post-industrial capitalism: there is certainly a lot of energy (and capital) being poured into that question. It is not so clear that common ground exists between the focus on otherworldly consciousness—which is ultimately the source of the narcissism—and those same concerns. Indeed, if anything, it is the solipsism of the New Age that marks it as ecologically unnatural: ecologies depend on interaction, on the engagement across time of divergent and asymmetrically equal forces.

This hints at the ubiquitous nature of the New Age's focus—some would say obsession—on the self. An obvious current in the description above, this is also present in more subtle turns of thought. For example, recall our discussion of health and healing in chapter one, where we explored how notions of health and notions of spirituality were fused in a specifically American manner by early European colonizers and inherited by their future generations, including the New Age, albeit with a significant twist:

the *goal* of much New Age spirituality is health and happiness, rather than health and happiness being a potential *by-product* of the religious life. That is to say, whilst we have seen that some Christians may become wealthy as a result of the Protestant work ethic, health and happiness are not their goals. Indeed, suffering, poverty and the lack of worldly success are invested with spiritual significance. Arguably, even “prosperity Christianity,” which does prize health and wealth, only does so because such material gains are viewed as evidence of God's pleasure with a life lived faithfully. The aim is obedience to God. (Partridge 2004, 1:33)

Partridge may be accused of letting wealth theology off the hook far too easily—certainly

one would imagine that Spangler would think as much—and he is clearly avoiding the historical relationships between the New Age and contemporary Christian theologies of financial success, but his observation about the New Age is highly relevant: the key turn is one where that which once was an effect of religious behavior has instead become its goal. In many ways, this is how the New Age sidesteps secularization, by being explicitly comfortable with the removal of the trappings of the church—any church—from the equation entirely.

The Slippery Slope of Invented History

She said: What is history?
And he said: History is an angel being blown backwards into the future
He said: History is a pile of debris
And the angel wants to go back and fix things
To repair the things that have been broken
But there is a storm blowing from Paradise
And the storm keeps blowing the angel backwards into the future
And this storm, this storm is called Progress

Laurie Anderson, *The Dream Before* (for Walter Benjamin)

There is a final critique of the New Age worth considering at this point, one that leads us towards the final group we will consider in this study, practitioners loosely grouped under the nomenclature of neopagan. Before moving on, however, once again we have a definitional argument to navigate. At the level of encyclopedia, Sarah M. Pike writes that “the term *Neopagan* covers a wide variety of traditions that include re-creations of ancient Celtic Druidism (a British organization of sun worshippers who gathered in

sacred groves), Wicca or Witchcraft, ceremonial magic, and neoshamanism (revivals of ecstatic journeys into the spirit world in indigenous and pre-Christian cultures).” (Pike 2005, 6470) Writing elsewhere, Pike claims four primary contributing traditions to the neopagan community: various folk traditions that are re-imagined and recreated by contemporary practitioners; traditions of ceremonial magic whose roots stretch from medieval alchemy through the Order of the Golden Dawn and its many, many offshoots; Albanese’s identified tradition of American nature religion, detailed in chapter two; and the inheritance from the 1960s countercultural movements, including the embracing of Asian (and, to a much lesser degree, other non-European) traditions. (Pike 2001, xiv–xv)

Some additional detail: in Europe, the term pagan seems to be preferred, without the prefix; many Wiccans (whom we shall turn to in detail momentarily) identify very strongly with that term, or with another subgroup identifier; and there remain group identity issues with various extreme right-wing religious movements that also claim variants of the term pagan. This paper is focused on what may—tongue only slightly in cheek—be referred to as mainstream paganism, excluding the various fascist, neo-fascist, and proto-fascist movements that also make claim to the term. This is not to dismiss the troubling nature of the shared history of these movements: the impact, for example, of late nineteenth century Romanticism on both modern witchcraft practices and on various Nordic-inspired white supremacy movements points to what are, at the very least, uncomfortable moments of shared heritage. That noted, I would confidently claim that an engagement with the neo-Nazi extreme of the Ásatrú movement or the far right wing factions of various forms of Odinism would result in obvious and glaring incompatibilities with the interpretation of

neopaganism presented below.

These are in general practices that have developed primarily in North America and Europe over the last fifty to one hundred years, traditions which have grown and stabilized to the point where clear broad-based distinctions have emerged (even if the terminology has not yet fully settled) between, for example, Wicca and feminist witchcraft as well as vertical practices within each tradition (say, Gardnerian versus Alexandrian). Fuller writes that “recent studies suggest there may be as many as 200,000 Neo-Pagans in the United States. One study found them to be mainly young to middle-aged adults, urbanites, mostly white, middle-class, and by slight majority (57%) female. Pagans are, in other words, ordinary Americans.” (Fuller 2001, 95) It is important to highlight Fuller’s collapse of America into whiteness: we have visited Carl Anthony in an earlier chapter, and his critique of the ways in which American alternative spiritual practices continue to reflect an endemic lack of diversity rings true here as well.

Discussions of the history of neopaganism in Europe and North America are convoluted things full of truth-claims that lead down rabbits’ warrens of counter-claims and denials at both the specific and methodological levels. When seen from a distance, Joseph Alter’s work on yoga provides a useful parallel to keep in mind. Alter is faced with a similar context, observing that “many authors write as though they are the only person writing on the subject with any authority, and that what they are saying is new. Yet if there is one single thing that characterizes the literature on Yoga, it is repetition and redundancy in the guise of novelty and independent invention.” (Alter 2004, xviii) Substitute “neopaganism”—some would say the entirety of the “New Age” would serve just as

well—for “yoga” and Alter has described a survey of “authoritative” neopagan texts. It may be helpful to retain another of Alter’s concepts as we look at some of these issues, that of the “just-past.”

Essentially the present’s just-past is a time frame of rapid remembering and forgetting, compounded by the transmission of knowledge from one generation to the next. In other words, the just-past of the present—which I take to be different from modern history, even though modern history seeks to deal with this period of time as a time period—is when facticity matters a great deal, but when individual memories produce competing and contradictory realities. The arguments about who was the first to popularize, modernize, and demystify Yoga may be relatively less significant than the question of whose sense of holiness defines the Holy Land, or how events transpired there in the aftermath of World War I—to choose a highly politicized and volatile example—but the dynamic is very much the same. Beyond this, however, there is, in the present’s just-past, the seductive sense that someone is really right, and that with enough information the truth can be established. (Alter 2004, xvi)

Neopaganism’s just-past offers an additional complication, as it contains within it a deep return, a claim that, in the just-past, a tradition that stretches back centuries or thousands of years or millennia has re-emerged. Authority is often based on this second chronological movement, and we are left with narratives that compete on the accuracy of their recent progenitor’s memories of the memories of their distant ancestor’s. This has become so prevalent, especially in Wiccan and other magically-focused neopagan traditions that the term *fam-trad* has emerged into common usage. Clearly, much like many of the claims about larger historical movements, these long-standing family secrets, passed down from generation to generation, many of the *fam-trad* lineages are recently invented, more an exercise in (depending on how charitable the interpretation) self-definition or marketing. Clifton is rightfully dismissive of these stories as truth-claims when he writes that “what has happened is more of a reinterpretation than a continuation of family-based Witchcraft, which is always conveniently undocumented.” (Clifton 2006, 126) However, in a tone that

permeates much of his work, he is also deaf to the ways in which these claims of community, of family, of tradition serve to provide neopagan practitioners with a context within which they can successfully socially situate themselves and how they shape the dialog between practitioners as they continue to (re)invent their practices. This seems to be more an issue for etic observers (including academics) than practitioners: consider Hammer and Lewis' introduction to their collection *The Invention of Sacred Tradition* where they write that "other religious traditions in the contemporary West have constructed even more emphatic ways of questioning authenticity and playfully accepting that one's own religion is a patchwork of human creativity," to the point where

the realization that much of their historical background consists of deliberate inventions has not prevented these movements from thriving. ... Outside observers may react with skepticism to the idea that an ancient religion could be revived many centuries after it was last practiced. Pagans, however, are usually fully aware of the gulf separating the past from the present, to the point of readily accepting that they are not recreating but inventing a tradition. (Hammer and Lewis 2007, 15)

This collection bears further consideration: of the fourteen chapters ranging from studies of authorship in the Hebrew Bible and the New Testament to explorations of primal authority in traditions focused on dominant leaders (L. Ron Hubbard, Carlos Castaneda, Zoroaster, the Reverend Sun Myung Moon), Graham Harvey's chapter "Inventing Paganism: making nature" stands out not only in its relevance to our present considerations, but also in the friendliness with which paganisms (neo and other) treat historical invention.

This is not a simple matter: on the one hand, there is a strongly instinctive reaction that making up history is, well, *bad*: certainly such behavior has been used to justify and rationalize all manner of violence. The key differentiator seems to be the fierceness with

which the fictions are held: in the case of neopaganism, they end up being held very, very loosely. This is almost a requirement: if one of your traditions emerge out of a challenge to your college's rules about mandatory church attendance (the Reformed Druids of North America, formed in 1963) or another is inspired by Robert Heinlein's *Stranger in a Strange Land* (the Church of All Worlds), the fragility of their historical roots is embraced almost through necessity. The specific forms of neopaganism that we will address later had a harder time of it: even though modern Wicca emerged virtually full-blown from the works of Gerald Gardner in the middle of the twentieth century, his own claims of ancient fam-trad authority served to muddy the waters for decades. In a deft turn of phrase, Clifton observes that "when the new Pagan religion of Wicca arrived in the United States from England in the 1960s, it presented itself as the Old Religion, the ancestral Paganism of the British Isles, and as a mystery cult of both fertility and magic." (Clifton 2006, 41) The general form of the claim—remember, we are talking about dozens and dozens of different and disparate lineages—was that the Old Religion was passed down in secret from person to person or group to group, with roots that traced all the way back to a local tradition anchored somewhere between the central Asian steppes and the west coast of Ireland, and had survived wave after wave of persecution by dominant, usually churched, forms of control and authority. However, by the turn of the century, those arguments—at least among the more scholarly inclined—had largely been settled, perhaps most eloquently through Diane Purkiss' elegantly titled "A Holocaust of one's own: the myth of the Burning Times," where she explores the dangers inherent in attempting to establish a historical record of the devastation of that specific period, a topic hotly contested in the

preceding decades to the point where there were numerous claims that over 500,000—and as many as nine million (Andrea Dworkin’s number)—pagan practitioners were put to death during centuries of European persecution. (Golden 2001) It is important to note that many of the hugely inflated figures exist in arguments where their ultimate truth is in fact nearly irrelevant; that is, the execution of witches is seen less as an historical event than as a metaphor for the continued violence of patriarchy, or, in Purkiss’ words, the discussion of witchcraft “is less a presentation of external events than the story of an internal voyage, a metaphorical journey into the heart of patriarchal darkness.” (Purkiss 1996, 13) This reclamation of the external into the internal echoes the New Age itself, and serves as one of the ways in which neopaganism does indeed fit very comfortably within the confines of that movement: history is seen as existing along dual, vaguely parallel planes, one external and comprised of a shifting and often hotly contested series of events; the other internal and reflective of an individual’s perception of themselves refracted through an imagined past. Quoting Anthony Giddens’ maxim that “all traditions ... are invented traditions,” Charlotte E. Hardman adds that, “although a distinction between authentic ethnographic reporting and the fictitious can be made, nevertheless creativity, omission, or distortion is inevitable in the description of any culture, tradition, or religion. ... Movement, change, imagination, and debate are essential in the formation of traditions.” (Hardman 2007, 39) Graham Harvey offers an interesting path through the question that we will consider again later in this chapter, since it also engages with the question of the role of nature in neopaganism. For now, a summary worth considering in full:

An observer may be tempted to belittle the very idea that an ancient religion can be fully revived centuries, if not millennia, after it was last practiced. However, those

who make claims about their engagement with the “old religion” of their ancestors, or that of the ancestors who lived in a location, may intend something far more complex than observers may impute. They are usually fully aware of the disjunctions between the past and the present, and they are often explicit that museum and literary resources are less than adequate as sources of knowledge about religious ideas, performance, and material culture.

In short, while the centrality of nature and ancestral traditions are of inestimable importance in understanding Pagan identities, practices, cosmology, and religioning, they are not uncontested, undebated, or unexamined among Pagans. Just as “observance” is both the center and the dividing point among Jews, and “Jesus Christ” both unifies and divides Christians, so nature and tradition are the common ground and the contested territory of Paganisms. They are the focus for that which inspires and requires continuous creativity or, if need be, invention. (Harvey 2007, 279)

All of this is further problematized by the constant, even manic, levels of appropriation that characterize most movements of the New Age, including virtually all forms of neopaganism—indeed, even those that don’t conform to this pattern do so as a reaction, as an insistence on maintaining a purity of tradition or identity. Appropriation in the post-colonial, post-modern, thoroughly globalized world is a complex thing, and a full critique of its movements and impacts—even within the narrow world of the New Age or neopaganism—falls outside of our current scope. At the same time, I would hearken back to our earlier discussion of Gill’s work on the emergence of an Earth Mother as a key figure in defining a sense of “indianess,” a concept that was desired into being as much by the external community as the insiders. While I would insist that Hammer merely describes one of many possible instances of the “historical process by which such an appropriation takes place,” his summary should suffice as an archetypical exemplar:

First, travel narratives are published, or ethnographic or historical accounts become available, in which the exotic custom is presented. The descriptions in such books are not directly intended to be emulated by a Western audience. Creative spokespersons steeped in the Esoteric Tradition read these texts and transform them to fit in with culturally predetermined elements of the their own (Western) tradition. Then come the first do-it-yourself books, works that transform the new

element from a belief to be accepted to a practice to be performed or an experience to be sought after. Knowledge that was previously difficult to gain now becomes increasingly available to a general readership. A small number of Esoteric interpretations commonly become trend-setting templates that structure the doctrines presented in later works.

The rapid process of reinterpretation and change soon transforms the originally exotic doctrine into an organic part of the new context. Neoshamanism as practiced by Harner's adepts differs significantly from the "traditional" or tribal shamanism of Harner's Shuar and Conibo teachers. Sufism in the west is something quite different than Sufism among e.g. the Mourids of Senegal, while the kabbala of the occult revival is distinct from the complex kabbalism of medieval Provence. Writers will attempt to stress continuity and disregard change, a legitimizing process that has its typical elements. (Hammer 2003, 159)

At a minimum, any claims of continuity with historically disparate sources need to be treated with what may be termed a sympathetic skepticism: they are often grounded in a fervent belief in their accuracy and a genuine expression of transformative experience. That does not legitimize them as truth-claims, but it does expose the fascinating in-between space we have entered, where etic practitioners walk side-by-side with what Susan Mumm, in a fantastic turn of phrase, calls *Aspirational Indians*. (Mumm 2002) This term is so appealing because it attempts to capture the complexity of the situation: aspirational goals are often very good things, we need them to move forward, to progress and develop. But it also very clearly delineates the fact that—whatever claims to the experience of prior lives or to what they feel deep in their heart or soul—this population is something other than *actual*.

Many pages ago, I mentioned a final critique of the New Age. It centers on the difficulty that many of these practices have in encounters with the destructive or the deadly, with the common presence of misfortune and cruelty in the lives of millions, and with theodicy in general. (In this, we are also harkening back to one of our final critiques

of Muir in chapter three.) There are obstacles here for scholars as well: in an exploration of issues raised by Eliade, J. Z. Smith observed somewhat offhandedly

that historians of religion have been weakest in interpreting those myths which do not reveal a cosmos in which man finds a place to dwell and on which he found his existence, but rather which suggest the problematic nature of existence and fundamental tension in the cosmos. I have in mind such traditions as dualistic creation myths, Earth-diver traditions, Tricksters, or the complex narratives of Corn or Rice Mothers who create by “loathsome” processes (e.g., rubbing the dirt off their bodies, by defecation, secretion). Clearly these mythologies, many of which are extremely archaic, point to a different spiritual horizon. (Smith 1978, 100)

This observation may be less relevant in contemporary scholarship, and may reflect the transition from the 1970s to the 2010s as much as anything else. Still, our tendency—as a culture, and perhaps as scholars—to be less successful in our encounters with more problematic subjects should be kept in mind as we examine the critiques below. As an overview, consider the following (somewhat dated in their specifics) remarks from William Irwin Thompson:

New Age parents don’t wish their children to come to terms with the problem of evil. In their own condition of being afraid of the world, they have a need for a sentimentalized kind of innocence, which they then project onto their children. They try to hold their children tightly into these containers of innocence as they refuse to allow them to play with guns or *Masters of the Universe*, those ugly, distasteful American dolls from Mattel.

As adults, we inhabit a world that is unconsciously organized around evil and pollution and crime and terrorism: jumbo jets get shot down and all kinds of terrorizing events are reported to us every day, but we don’t allow our children to come to terms with these things. Yet our children hear about these things, or actually see them on television. Then, as they begin to act out caricatures of evil as their way of playing with incarnation, of *toying* with the fear of death, we say, “No, stop! I need you to be my symbol of innocence. You must play only with wooden Anthroposophical toys. You must not have guns. You must live in a world that I know to be a lie. I need this of you, and I demand this of you.” The child, of course, feels the tyranny, the oppression, and the unfairness of this, and then he or she just raises the ante. (Spangler and Thompson 1991, 66)

Thompson’s focus is on a parental protectiveness, but the underlying discomfort with

notions of violence and evil are prevalent throughout much of the New Age corpus. This is far from an original observation, and the critique of it is severe and significant, most commonly recognizing that, deeply embedded in the assumption that we are able to control our external circumstances, is a troubling tendency to blame the victim: if we choose and construct our own reality, we choose cancer, we choose abuse, we choose oppression. Obviously, the ability to construct a reality is a luxury afforded a very few: for the rest of the populace, the sheer weight and power of the structures that shape our lives are often overwhelmingly determinative, placing gross limits on the agency that is available.

There is a response to this critique that refocuses the discussion on our personal behavior within those conditions: that is, perhaps we cannot control our external reality, but we certainly can control our reactions to it; we can create a new reality by insisting on a different perspective, a different emotional engagement with those conditions. The problem is that the New Age as a whole places fairly strict limits on those reactions: there is often little room for anger outside of a somewhat predictable Freudian structure (or, in other circles, a neatly inverted version that amounts to the same thing), little room for fierce moments of individual expression, little room for the ultimate amorality of the natural world.

This last brings us back into focus: nature, despite our best efforts to paint her as mother or dangerous beast, as caregiver or deadly force, resists any attempt to force her into an ethical dimension. The sun rises on the good and the evil; the rain falls on the just and the unjust alike. More than that, the impacts of the storm are arbitrary and unpredictable. I write this chapter months after the Gulf Coast has witnessed a long series

of natural and man-made disasters: oil spills, hurricanes, massive flooding. Of all of it, it was the drought of 2010, when we went more than two hundred days without rainfall, that has caused the most permanent damage to the ecosystem, killing millions of old and medium growth trees. This drought is as natural as the recent rainstorms, and no more or less natural than the one hundred and fifty plus mile per hour winds of Hurricane Katrina or the more recent devastation of the intriguingly coded “superstorm Sandy.” Of all the figures considered, this was a truth most comfortably seen by Muir, for whom the “dark side” of nature—the thunderstorms, the damage caused through natural disasters, the risk inherent in being exposed to the raw power of the elements—was an exact part of the mystery of the phenomenal world: indeed, Muir would protest against any separation of nature into light and dark, let alone subjective terms like good and evil. For him, it was all light, all part of the same ecology, and working with one part of that system necessarily involved entanglements with the rest. This view finds its most clear contemporary advocates in neopaganism, and specifically in the various witchcraft movements.

Spin Your Partner Round and Round: *The Spiral Dance* as Movement Text

Just as Starhawk operates with two concepts of religion so she assumes, simultaneously, two corresponding sign-theories. One is metaphorical, nominalist and horizontal, suiting her feminist, post-Romantic symbolic programme. The other is magical, realist and vertical, suiting her personal-spiritual transformation agenda and occult lineage.

Jone Salomonsen, *Feminist Witchcraft and Holy Hermeneutics*

There is a lot of excellent work in print on the history of neopaganism, however much of it is hidden in wider studies, or requires inference from related topics (most notably, that of magic). (Albanese 1990; Heelas 1996; Purkiss 1996; Hanegraaff 1998a; Pearson, Roberts, and Samuel 1998; Patton and Ray 2000; Pearson 2002; Styers 2004; H. A. Berger 2005; Clifton 2006; Pike 2006; Albanese 2007) Still, by now the archaeological remains of the movement have been well excavated and, out of respect to that work and the knowledge that I have little to add to it, instead of attempting a history of neopaganism I want to trace the development in thought of one of the early and most influential writers, Starhawk (née Miriam Stamos, born 1951), whose *The Spiral Dance* remains a highly influential point of entry for many to neopaganism and Wicca. In selecting *The Spiral Dance*, I have been influenced by Olav Hammer's discussion of "movement texts," which he sees as works that

hover in a strange borderland between factual and fictional narratives. Emically, they will be marked and perceived as belonging to either category. At the same time, movement texts seem to address "typically religious" subjects such as the origin of the world, the existence of spiritual beings or the correct performance of

rituals. Religious narratives have traditionally been characterized by means of a limited number of genre terms: myth, legend, hagiography etc. One could suspect that modern movement texts might correspond to specific genres of textual material from pre-modern religious movements. However, terms such as myth and legend do not appear to be used at all emically to categorize movement texts.

...

Modern books might be considered mixtures of doctrinal statements, polemic tracts, fictional accounts and exegeses superimposed on other religious doctrines. Given the fundamentally modern as well as hybrid genres that constitute such books *in toto*, individual ideas expressed therein, single passages as well as larger sections of text within such works can nevertheless be seen as functionally similar to older genres. (Hammer 2003, 38–40)

In typically dense fashion, Hammer touches on quite a number of important observations here: movement texts are accepted by their emic audience as fact, as fiction, and often simultaneously as both; movement texts tend to avoid the troublesome toxa of myth and legend, side-stepping them entirely; and while they may resist many of the ready-at-hand classificatory systems available to scholars in their entirety, those systems may still prove illuminating when applied judiciously and in context.

First published in 1979, *The Spiral Dance* moves back and forth between lyrical descriptions of religious experience, theoretical and historical narrative, and exercises designed to allow individuals to learn and practice what Starhawk at this point refers to as Witchcraft (the terms neopaganism and, her preferred later identifier, Wicca, were yet to come into common usage). In structure, therefore, the book is a classic self-help text, mixing a tone of authoritative popular scholarship with the step by step instructions of a practical primer.

I use the term “popular scholarship” quite intentionally: many of the claims made in *The Spiral Dance* do not stand up to academic examination, an issue that has

consistently plagued alternative religious movements. Many of the larger of these issues—the exaggerated claims related to witch persecutions in Europe, the disputes about the existence of either pre-patriarchal or explicitly matriarchal civilizations in several geographic locations, the tendency to rationalize cultural appropriation without sufficient consideration or context—have been treated elsewhere and have been grappled with quite seriously from inside the movement as well, including by Starhawk herself. Indeed, this emic engagement with scholarship and with change is part of how these traditions have resisted the sort of closed nature present in much of the New Age discussed above.

At the time of *The Spiral Dance*, however, the narrative was a highly romanticized version of persecution: in ancient times peace and the Goddess had ruled the land, defined both explicitly and implicitly as Europe with expansion into North America. An example that both makes the geographic bias quite clear and hints at the stylistic consistency with Muir's enthusiasms:

In the East—Siberia and the Ukraine—the Goddess was Lady of the Mammoths; She was carved from stone in great swelling curves that embodied her gifts of abundance. In the West, in the great cave temples of southern France and Spain, her rites were performed deep in the secret wombs of the earth, where the great polar forces were painted as bison and horses, superimposed, emerging from the cave walls like spirits out of a dream. (Starhawk 1979, 3)

This pre-technological utopia held sway for nigh on thirty thousand years. But there was trouble brewing in paradise:

But in other lands, cultures developed that devoted themselves to the arts of war. Wave after wave of invasion swept over Europe from the Bronze Age on. Warrior gods drove the Goddess peoples out from the fertile lowlands and fine temples, into the hills and high mountains where they became known as the Sidhe, the Picts or Pixies, the Fair Folk or Faeries. The mythological cycle of Goddess and Consort, Mother and Divine Child, which had held sway for 30 thousand years, was changed to conform to the values of the conquering patriarchies. (Starhawk 1979, 4)

And so the stage is set: a dominant tradition, marked by a female-centered mystic peace, is driven underground, surviving in oral traditions and in (largely rural) gatherings. These traditions are central to communal life: “healers, teachers, poets, and midwives, they were central figures in every community.” (Starhawk 1979, 5) Starhawk’s gaze constricts further on Europe as the rate of persecution there increases, peaking in the fifteenth and sixteenth centuries with the same horrors that Sagan, through Ady and Spee, (along with Purkiss and Golden) examined above.

Thirty-some years on, this creation myth is disturbing and, thankfully, largely adjusted, especially in how clearly the then-potential, but later realized, affiliation between neopaganism and various Aryan revival movements reveals itself in this particular recasting of history where the peace and purity of Europe fall beneath the brutal onslaught of waves of barbarians from the East and the contemporary sacred calling is a restitution of that original state. As Hanegraaff points out, “commentators of the contemporary neopagan movement(s) usually seem unaware of the fact that the term neopaganism is also used in quite different contexts, particularly in connection with certain religious and philosophical developments in prewar Germany.” (Hanegraaff 1998a, 77) Indeed, the movement under consideration here—which Hanegraaff terms the “New Age variety” of Neopaganism—would be horrified to learn either of those historical connections or the ways in which their own mythos could be construed as supportive of openly fascistic tendencies. (Adler 1986, 273)

Interestingly, Starhawk raises this issue in *The Spiral Dance*, but she does so only at the level of the use of magic, not at the level of a set of assumptions serving to mold

thought and practice. She is sensitive to the charge “that Witchcraft and occultism are in some way a revival of Nazism,” but sees the problem as one of the implementation of a specific set of tools:

There does seem to be evidence that Hitler and other Nazis were occultists—that is, they may have practiced some of the same techniques as others who seek to expand the horizons of the mind. Magic, like chemistry, is a set of techniques that can be put to the service of any philosophy. The rise of the Third Reich played on the civilized Germans’ disillusionment with rationalism and tapped a deep longing to recover modes of experience Western culture had too long ignored. It is as if we had been trained, since infancy, never to use our left arms: The muscles have partly atrophied but they cry out to be used. But Hitler perverted this longing and twisted it into cruelty and horror. (Starhawk 1979, 13)

Starhawk is clearly incredulous that the comparison can even be made, closing the discussion by claiming that, “To equate Witches with Nazis because neither are Judeo-Christians and both share magical elements is like saying that swans are really scorpions because neither are horses and both have tails.” (Starhawk 1979, 13) It is a good line, but not exactly a convincing argument, at least at a structural level deeper than the mere use of magic: we know too much about how tools are linked to their uses and how cultural forms of thought tend to reappear, intentionally or not, across different disciplines.

We discussed the term *magic* in some depth in chapter two; recalling those considerations, we can now introduce another twist in magic’s historical development, the change of magic from mystery to technology, well revealed through the neopagan definition quoted earlier of magic being “the art of changing consciousness at will.” This quote is found in numerous places, most often attributed to Dion Fortune although sometimes to Robert Anton Wilson. While the quote may just be a meme that found a home, there is also at least the possibility that the lack of clear attribution may be due to

the long and often twisted shadow of Aleister Crowley. Crowley is a difficult subject for many magical traditions: on the one hand, his influence is immense and his technical insight into the workings of his craft remain hugely relevant. On the other hand, you have the depravity, the egomania, the misogyny, and the rampant disregard for most other human beings. Weighing those is beyond our work here, where he only appears as a figure of the past, intentionally blurred by much of the present. In one of a series of letters aimed at leading a pupil through the initial steps of magical practice, Crowley wrote that (spelling and capitalization retained), “Magick is the Science and Art of causing Change to occur in conformity with Will.” (A. Crowley 1991, 27) There is no direct recognition of Fortune (or Wilson) having this in mind, but Crowley’s writing does predate theirs. In any case, the discomfort Crowley causes—independent of his role in the formation of the ubiquitous definition of magic—reminds us again of how neopaganism struggles in the presentation of its relationship with the more problematic parts of its past.

Note that I am not attempting to equate neopaganism with Nazism—I believe that any even cursory engagement with either set of beliefs will prove sufficient to enumerate deeply important differences between the two. I am, however, trying quite intentionally to crack some of the foundations upon which the myth of New Age purity is built: oftentimes, a notion exists that since parts of a tradition are recently invented, or are even being expressed creatively in the moment, those behaviors must be excused from any of the weight of cultural history. *We’re all good people, you know we wouldn’t do anything that was bad.* This is, of course, nonsense, and like any tradition emerging from the twentieth century West, neopaganism must constantly examine its own motivations, behaviors, and

impact.

This examination would be much easier if there were an established creed or, barring that, some sort of central authority to appeal to. But there is none:

Witchcraft is not a religion of masses—of any sort. Its structure is cellular, based on covens, small groups of up to thirteen members what allow for both communal sharing and individual independence. “Solitaries,” Witches who prefer to worship alone, are the exception. Covens are autonomous, free to use whatever rituals, chants and invocations they prefer. There is no set prayer book or liturgy. (Starhawk 1979, 13)

Given this, it can be quite difficult to pin down exactly what the tenets of neopaganism are—indeed, if someone claims to do so with any pretense of universality, it is usually a marker of other agendas at play, usually engaged with internecine boundary maintenance. The best that we can do is clearly identify and work with what (in our case) Starhawk writes at a specific point in time, at a certain moment in her own history and development. The cosmology of *The Spiral Dance* differs from her later work, in ways that we will examine shortly. This fluidity is explicit and valued:

Witchcraft has always been a religion of poetry, not theology. The myths, legends, and teachings are recognized as metaphors for “That-Which-Cannot-Be-Told,” the absolute reality our limited minds can never completely know. The mysteries of the absolute can never be explained—only felt or intuited. Symbols and ritual acts are used to trigger altered states of awareness, in which insights that go beyond words are revealed. When we speak of “the secrets that cannot be told,” we do not mean merely the rules that prevent us from speaking freely. We mean that the inner knowledge literally *cannot* be expressed in words. It can only be conveyed by experience, and no one can legislate what insight another person may draw from any given experience. (Starhawk 1979, 7)

This is reinforced on the level of both the individual and the practice as a whole: individual experience is seen as unique and truthful, allowing two people to claim widely differing insights from a shared experience without those discrepancies necessarily leading to conflict. At the level of practice, most practitioners of witchcraft are, to one degree or

another, eclectic, “creating their own traditions from many sources.” (Starhawk 1979, 11)

Maintaining Imbalance: Asymmetry and Community Engagement as a Corrective to Notions of Equality

Wicca had moved out of the darkness, the occult world of witchery, to occupy the moral high ground—environmentalism. To be at one with nature in one's inner self is no longer enough; radical action to preserve nature is now important.

Vivianne Crowley, *Wicca as Nature Religion*

There is a set of unbalanced relationships that help give form and structure to Starhawk's world. The first of these concerns the relationship between a professed duality of male and female (Goddess and God) and the second focuses on the structure of our consciousness, separating it into three parts that Starhawk refers to as Talking Self, Younger Self, and High Self. In each case, the focus of neopaganism is explicitly uneven: the Goddess has primacy over the God and Younger Self (and, through it, High Self) receives more attention than Talking Self. It is easy to dismiss the lack of balance as a corrective: that is, in a world dominated both by patriarchy and by a particularly aggressively narrow view of masculinity and by a primacy given to the highly logical and the hyper-rational, a practice that brands itself as alternative has no choice but to embrace some constructed notion of femininity and of the creative imaginal. While this is certainly true to some extent, the structural imbalance runs deeper in most forms of neopaganism.

The gender dichotomy may be viewed as an imbalanced polarity, where the balance point between male and female is most decidedly skewed towards the feminine. “The Goddess does not exclude the male; She contains him, as a pregnant woman contains a male child. Her own male aspect embodies both the solar light of the intellect and wild, untamed animal energy.” (Starhawk 1979, 10) There are many more Dianic covens—that is, neopagan practitioners that focus almost exclusively upon the Goddess and what is sometimes called “feminist Wicca”—than there are masculine inclined parallels and, indeed, a focus on masculinity is often met with a degree of suspicion. This has proven to be a locus of both strength and discomfort for neopaganism as a whole: strength in that feminist-centered spirituality remains one of the strongest concentrations of practitioners and the emic claims of those groups speak to highly powerful, transformational moments in the lives of individuals and groups; the discomfort is nicely summarized by Sarah Pike when she writes

Men have accused goddess worshippers of reverse sexism; transgendered people disallowed by a few woman-only groups have charged that they are discriminatory; some heterosexual women in lesbian-dominated feminist groups have felt uncomfortable; archeologists and historians of the ancient world have dismissed arguments for ancient goddess-worshiping matriarchies. (Pike 2006, 128)

Pike is overly gentle, a corrective is offered by Katherine K. Young and Paul Nathanson’s 2010 screed *Sanctifying Misandry* (being footnoted, well-written, and scholarly in tone does not disqualify it from that category). Essentially, and they are all about the essentials, Young and Nathanson look upon second wave feminism with horror, especially in its adherents who advocate for a feminine-centered spirituality. In this category, somehow, they include Dan Brown, whose monstrously successful novel *The Da*

Vinci Code is also seen as proof of a vast, connected network of anti-male media and academics who are conspiring to somehow undermine the fair and equal interplay of the sexes. Some of what Young and Nathanson have to say is quite valid and, indeed, overlaps with ground we have already covered: the looseness with which feminist recreations of the past have played with history, the overly simplistic narratives that are offered in place of actual research, etc. However, they lump all of their subjects—from Mary Daly to Rosemary Reuther, from Riane Eisler to Marija Gimbutas—under the rubric of “goddess ideology,” which has as its goal the diabolical notion of the separation of the genders:

The logical conclusion to goddess ideology is not necessarily for women to exterminate men, but for women to separate from men. That might work for gay women, some of whom feel no compelling reason at all to mingle with men. But it would not work so well for straight women, most of whom want healthy relationships with men. Besides, separatism—whether sexual, religious, racial, linguistic, or any other kind—presents a profound *moral* problem to those who, like egalitarian feminists, include the fear of “otherness” and the resulting desire to exclude “others” among the most fundamental human problems. Even if we could engineer two truly separate but equal realms, we could do so only at the cost of a truly historic moral defeat. (Young and Nathanson 2011, 267–8)

This is a claim that can only be made from a position of privileged inclusion: it requires a severe ignorance of history—and specifically the history they invoke with the phrase “separate but equal”—to miss the strength and possibilities contained within periods of exclusion and separation. The question, as always, is *cui bono*? While openly sympathetic to the concerns Pike raises above, to move from those questions to the conclusion that goddess ideology—a term Young and Nathanson’s subjects may very well embrace—is, necessarily, a profound threat to our moral existence is clearly misreading the situation. Most fundamentally, it rests on a conception of the universe as an already-fair, already-equal, already-balanced context, where everyone is already set on the veritable level

playing field.

Enough: returning our attention to Starhawk, for whom the world is far more nuanced, the goal is not balance, but interplay; not equality but interaction. The practitioner is supposed to be aware of their own state, and is required to make conscious choices about their intentions with regards to both dualities. In this sense, Starhawk's neopaganism is neither a monism (although it drifts quite close to that at points) nor a dualism where two forces exist in contradistinction to each other. Instead, there is a struggle towards harmony, a struggle that is cognizant of starting from a position of somewhat severe imbalance. Appropriately, this is mirrored between the outer and inner worlds: the earth is seen as being close to an apocalyptic tipping point in terms of ecological and social ills, requiring divine intervention and action. As above, so below.

Starhawk's second polarity is actually a triad, but I want to focus initially on the distinction between Younger Self and Talking Self before introducing the notion of High Self. Her initial descriptions of Younger Self and Talking Self are worth quoting at length for both their content and their serving of an exemplar of certain sort of eclecticism endemic to neopagan writing.

It is Younger Self that directly experiences the world, through the holistic awareness of the right hemisphere. Sensations, emotions, basic drives, image memory, intuition and diffuse perception are functions of Younger Self, which corresponds roughly to Freud's concept of the id, to the personal and collective unconscious described by Jung, and to the "Child" mode of Transactional Analysis. Younger Self's verbal understanding is limited; it communicates through images, emotions, sensations, dreams, visions, and physical symptoms. Classical psychoanalysis developed from attempts to interpret the speech of Younger Self. Witchcraft not only interprets, but teaches us how to speak back to Younger Self.

Talking Self organizes the impressions of Younger Self, gives them names, classifies them into systems. As its name implies, it functions through the verbal, analytic awareness of the left hemisphere and can be compared to the concept of

the “ego” in both Jungian and Freudian psychology, although it also includes the superego—the set of verbally understood precepts that encourage us to make judgements [sic] about right and wrong. In the terms of Transactional Analysis, it would include both “Adult” and “Parent.” Talking Self speaks through words, abstract concepts, and numbers. (Starhawk 1979, 21)

Notice how Younger Self and Talking Self approximate authoritative discourse, but not quite: they are akin to a concept that is attributed to Freud or Jung or Transactional Analysis (remember, *The Spiral Dance* is published in the late 1970s), but there is little done to make the exact correlation specifically and technically understood. This creates an opening where neopaganism is free to pick and choose as it wishes from any system of analysis it encounters, actively engaging in a bricolage that accretes symbolic meaning atop core ideas in a fairly haphazard way. We will return to this notion later, and to a discussion of whether this is a strength or a weakness.

We remain in a position similar to the male/female polarity here (indeed, many writers will associate Talking Self with the masculine and Younger Self with the feminine) where an argument can be made that the tradition needs to focus primarily on Younger Self due to the dominance of Talking Self in our day-to-day reality: our lives are determined by words and numbers, and it is only by training ourselves in the language of Younger Self that we can hold any hope for altering our current level of conscious perception and action. *The Spiral Dance* moves back and forth between Starhawk’s brand of popular academic writing and do-it-yourself exercises, the first several of which are aimed at building the skills seen as necessary to increase awareness of and communication with Younger Self, specifically increasing sensitivity to perceptual patterns. In “Shadow Play,” we are told to draw shadows instead of things, focusing not on objects but on “the play of light and

shadow over various forms,” allowing us “to experience another way of seeing, in which separate objects disappear and only pattern remains.” A similar set of instructions is provided for “Rhythm Play” with regards to sound, where we are encouraged to ignore what the sounds represent, focusing instead on “the vast rhythm they create” and “the intricate, organic pattern in which each is a separate beat.” (Starhawk 1979, 20)

Younger Self, then, exists outside of the duality of signs, in the interplay of symbols without referents. The noises we hear, the objects we see, are interpreted directly as pointing to something—that is the honk of a passing car, that is the bark of the neighbor’s dog, that is a coffee cup, that a bag that was given away at a conference. Those connections emerge as a web linking signifiers and signified, a web that is the domain of Talking Self: it is Talking Self that tells us what things mean. Younger Self lives in the space of pure signification, where the sound and the form are divorced from the rest of the perceptive network. Or, at least, that is the idea: the difficulty is that, even in pure perception, we are required to provide some analytic function and those functions are embedded in a certain historic and cultural tableau. Indeed, even Starhawk is willing to back away from any desire to engage with an unfettered Younger Self, writing of the danger of ignoring “Talking Self’s survival judgment.” (Starhawk 1979, 23)

While there are hints at this point of the difficulties of engaging with Younger Self, the issue is clarified later in a chapter entirely devoted to the notion of “trance.” Here, Starhawk introduces

the Guardian, or the Shadow on the Threshold: the embodiment of all the impulses and qualities we have thrust into the unconscious because the conscious mind finds them unacceptable. All that we are and feel we should not be—sexual, angry, hostile, vulnerable, masochistic, self-hating, guilty, and even, perhaps, powerful or

creative—squats in the doorway between Younger Self and Talking Self, refusing to let us pass until we have looked it in the face and acknowledged our own essential humanness. (Starhawk 1979, 144–5)

The encounter with the Guardian is clearly witchcraft’s ordeal of passage, a required confrontation with not only the darker corners of the self, but also with the defense mechanisms created to preserve and protect that self. Starhawk strikes a careful balance here: we are certainly not embracing the raw violence of Eliade’s descriptions of various forms of shamanism where, in the part that later inheritors often discard, the initiate’s “limbs are removed and disjointed with an iron hook; the bones are cleaned, the flesh scraped, the body fluids thrown away, and the eyes torn from their sockets” (Eliade 2004, 36) or where “shamans are believed to have been killed by the spirits of their ancestors, who, after ‘cooking’ their bodies, counted their bones and replaced them, fastening them together with iron and covering them with new flesh.” (Eliade 2004, 159) While focused specifically on the relationship between modern movements and native American practices, Hammer summarizes the neopagan ambivalence towards historical shamanism in general quite neatly:

A factor that contributes to the success of neo-shamanic religiosity is the ability of cultural stereotypes to mold expectations. Traditional shamanisms, with a near-ubiquitous emphasis on power and violence, do not conform very well to Western images of what Indians are supposed to think and do. Neoshamanisms are almost inherently more successful in this respect, since they are created *by* exponents of alternative Western religiosity, principally *for* adherents of alternative Western religiosity.

Although the contrast should not be carried too far, it could be argued that early movement texts of neoshamanism such as Castaneda’s and Harner’s books saw native Americans as positive Others because they could offer something distinctly *different*, whereas recent movement texts increasingly attempt to assimilate native Americans into a perennial philosophy and appreciate them as positive Others because they offer yet another version of the *same* generalized spirituality. (Hammer 2003, 137–8)

Even in *The Spiral Dance*, and certainly more and more in later works, Starhawk—while still firmly entrenched in the “alternative Western religiosity” that Hammer describes—is willing to at least acknowledge the presence of power and violence, both within and without spiritual practice: we are not in the utterly positive and peaceful region of the New Age, where spiritual progression is simply a matter of letting go or surrendering. Neopagan Wicca is initiatory in both senses of the word: there is a mentor relationship that is required for a member to fully enter a coven *and* there is a moment of significant challenge that must be confronted and overcome. The purpose of this moment is holism: the specific example narrated in *The Spiral Dance* results in “a deep integration in her personality and a flowering of her personal and creative power,” (Starhawk 1979, 146) that leads Starhawk to pass on the leadership of her original coven, but this holism is probably best thought of as a conduit. By integrating the shadow into ourselves, we open ourselves to communication with Younger Self: the doorway between Talking Self and Younger Self is cleared, and the two may now fully engage.

The question of why we would want to engage so deeply with Younger Self—described by Starhawk as being “as balky and stubborn as the most cantankerous three-year old” (Starhawk 1979, 22)—remains open at this point. Part of the answer lies simply in increasing our capabilities for creative play, seen as absolutely central to witchcraft: “a child makes-believe that she is a queen; her chair becomes a throne. A Witch makes-believe that her wand has magic power, and it becomes a channel for energy.” (Starhawk 1979, 23) But there is a larger goal here as well. Younger Self is the conduit to “the Divine within, the ultimate and original essence, the spirit that exists beyond time, space, and

matter.” This is High Self, “our deepest level of wisdom and compassion ... conceived of as both male and female, two motes of consciousness united as one.” Starhawk writes that, “in the esoteric Judaism of the Cabalah, the High Self is named the Neshamah from the root *Shmh*, “to hear or listen”: the Neshamah is She Who Listens, the soul who inspires and guides us;” but she also identifies it with “the ‘Spirit Guide,’ ... as in John C. Lilly’s account of his LSD experiences in an isolation tank, where he reports meeting two helpful beings.” (Starhawk 1979, 22) High Self, then, is both the notion of the presence of an inner divine, but also the manifestation of that divine on a personal, externalized level. It may be useful here to summarize the entire system and for that I will turn to Jone Salomonsen’s attempt to map out the hermeneutics of Starhawk’s original coven, *Reclaiming*.

Starhawk’s four hermeneutical steps are as follows: (1) she starts in the visible, ordinary reality of the Talking Self. Here language has the status of metaphor because it can only grasp reality indirectly. This is Starhawk’s nominalist and symbolic position. Her Nietzsche-inspired criticism is that metaphor in our culture has turned into dogmatic concept, confusing the metaphor with the thing itself. To cut loose from this language “trap”, the only way out is to “dive” experientially into (2) the source of invisible, extraordinary reality, that is, into the Deep Self and the life-generating powers that convey real truth. The path to Deep Self goes through Younger Self. It can be found in ritual, and the status of language is now magical. This is Starhawk’s magico-empirical, or realist, position. After knowing truth from “diving” into the source, she returns to (3) visible reality and Talking Self, where language again is metaphorical. She now chooses new metaphors for this reality dependent upon the values implicit in names, not because they are true in a conceptual sense.

This whole process I place on a vertical axis. At this point Starhawk is ready for (4), the horizontal movement in the world to practice the magic of everyday life, where “talk” is equivalent to “walk”. In this ordinary reality, she constantly moves between an empirical-experiential and a symbolic position. Still, she is not outside the realm of the sacred, which is believed to be immanent and ever present. She has only changed consciousness. In magical reality the divine encompasses her completely; in ordinary reality she carries the divine inside as Deep Self and confronts it in “the other”. (Salomonsen 1998, 156)

And, of course, the fourth step merely sets the stage for the first, reinforcing the spiral and

fluidly repetitive nature of Starhawk's Wiccan practice.

This accents a core component of neopaganism as well as one of the clear ways in which the practice is quite well aligned with the larger New Age phenomena. Neopaganism is focused quite strongly on a notion of *personal journey*, with an equal stress on the two terms. We have already touched on the ways in which personal experiences are held as the ultimate arbiters of truth; the individuality of that notion is reinforced by the sense of motion and quest—even the title of Starhawk's book implies a never-ending movement, turning through a cycle again and again in different ways. Importantly as well, this remains a personal journey: it may be undertaken in the company of others and they may play an important role in its form and outcome, but High Self appears to each person differently and in different forms, a notion further supported by the individual eclecticism that is supported in neopaganism, where different members of the same coven may claim angelic, animalistic, human, or any other manifestation of their very own “spirit guides.”

I have quite intentionally focused heavily on the opening of *The Spiral Dance*, hoping to clarify the structural cosmology that Starhawk attributes to neopaganism. In doing so, I have ignored a constant thread in the book of political action: from the beginning, Starhawk was aware of the implications of her religious claims for her political life. In *The Spiral Dance*, this is a view heavily influenced by the heady days of second-wave feminism and thoroughly convinced of the power of the eternal feminine to save the planet. That potential, however, rests on a healthy dose of skepticism, extending even to the flow of Eastern spiritualities into North America, a critique that is worth quoting at

length.

The longing or expanded consciousness has taken many of us on a spiritual “journey to the East,” and Hindu, Taoist, and Buddhist concepts are infusing Western culture with new understandings. The East-West dialogue has become a major influence on the evolution of a new world view. Eastern religions offer a radically different approach to spirituality than Judeo-Christian traditions. They are experiential rather than intellectual; they offer exercises, practices, and meditations, rather than catechisms. The image of God is not the anthropomorphic, bearded God-Father in the sky—but the abstract, unknowable ground of consciousness itself, the void, the Tao, the flow. Their goal is not to *know* God, but to *be* God. In many ways, their philosophies are very close to that of Witchcraft.

As women, however, we need to look very closely at these philosophies and ask ourselves the hard-headed, critical question, “What’s in it for *me*? What does this spiritual system do for women?” Of course, the gurus, teachers, and ascended masters will tell us that, even by asking such a question, we are merely continuing in our enslavement to the Lords of Mind; that it is all simply another dodge of the ego as it resists dissolutions in the All. The truth is that while men, in our society, are encouraged to have strong egos and to function in competitive, aggressive, intellectualized modes that may indeed cause them pain, for most women the ego is like a fragile African violet, grown in secret from a seed, carefully nursed and fertilized and sheltered from too much sun. Before I toss mine out into the collective garbage heap, I want to be sure I’m getting something in return. I don’t feel qualified to discuss the way Eastern religions function within their own cultures. But if we look at women in the West who have embraced these cults, by and large we find them in bondage. An ecstatic bondage, perhaps; but bondage nevertheless.

Eastern religions may help men become more whole, in touch with the intuitive, receptive, gentle feelings they have been conditioned to ignore. But women cannot become whole by being yet more passive, gentle, and submissive than we already are. We become whole through knowing our strength and creativity, our aggression, our sexuality, by affirming the Self, not by denying it. We cannot achieve enlightenment through identifying with Buddha’s wife or Krishna’s gopi groupies. While India has strong Goddess traditions—of tantra, of Kali worship—these are less easily popularized in the West, because they do not fit our cultural expectation that truth is purveyed through male images, by charismatic males. (Starhawk 1979, 192–3)

While noting that she begins by admitting a close parallel with her own tradition, the aggressiveness of her attack is particularly striking, especially in the use of the dreaded word, “cults.” Paring this away, however, Starhawk has here prefigured much of the discourse surrounding feminism and the rise of eastern traditions in the west, especially as

it relates to the guru/student relationship. The notion of eastern structures offering insight, but only at the cost of replicating certain male-centered and male-dominated structures and systems is not original, but it is an important consideration for a feminist witch. This also highlights some of how eclecticism works within neopagan traditions: the accretion of foreign substances—symbols, rituals, sayings, whatever—is done, at its best, with attention being paid to whether or not there is consistency with the core cosmological assumptions of Wicca itself.

The rest of the text is, essentially, a workbook taking the reader through the notion of community expressed by a coven, a chapter each on the mysteries of the Goddess and the God, and an exploration of the standard stages of wiccan ritual, and ending with a paean to the possibilities offered by a future where neopaganism—and specifically, feminist neopaganism—plays a larger role in our communities and our politics, a closing not terribly different structurally from the tendencies described above in scientific writing.

Starhawk's next three books, *Truth or Dare* (1989), *Dreaming the Dark* (1997), and *Webs of Power* (2002) mark a progression in her thought that is worth examining. While still very embedded in the context of her practice as a witch, these texts are focused much more on political action and on her attempts to identify the relationships between magic, ritual, and social responsibility. Their content reflects this long arc as well: *Truth or Dare* contains similar exercises to those which populate *The Spiral Dance*, but as the book goes on, they become more and more sets of discussion questions, culminating in her final chapter which is an inventory of the different roles individuals take on in small-group formation.

The self-help nature of *The Spiral Dance* is absent entirely from *Dreaming the Dark* and *Webs of Power*, with the latter being, essentially an edited expansion of pieces published online in various anti-globalization and politically focused discussion forums. During the same time period, Starhawk published three novels, *The Fifth Sacred Thing* (1994), *Walking to Mercury* (1998), and *The Last Wild Witch* (2009) as well as co-authored three books: *The Pagan Book of Living and Dying* with M. Macha Nightmare and the Reclaiming Collective (1997), *Circle Round: Raising Children in Goddess Traditions* with Diane Baker and Anne Hill (2000) and *Twelve Wild Swans* with Hilary Valentine (2001). All five of these books fit much more neatly into the “expected” publishing form of spirituality and self-help, even the fiction: *The Fifth Sacred Thing* presents a future world where, within the context of a splintered and reconstituted United States, an ecologically and Wiccan driven utopia based in San Francisco is facing the threat of attack from an evangelically Christian nation to the south while *Walking to Mercury* is a prelude of sorts, covering the events that led to the transformation. (The third work of fiction, *The Last Wild Witch*, is an illustrated book for children.) The world of these novels is explicitly magical, and the themes and even the practical implications of *The Spiral Dance* can be easily seen. The other three books can also be seen as more direct continuations of *The Spiral Dance*, focusing in turn on a Wiccan lifecycle of ritual, children and child-rearing within the tradition and, finally, what may be seen as an attempt to provide an “advanced” class alongside the introductory nature of *The Spiral Dance* in *Twelve Wild Swans*, which attempts to fuse fiction and instructional practice.

I mention these five books to reinforce the fact that Starhawk never “left” her

writing about and from the neopagan world, even as she was marching in the streets of Seattle, Quebec, and Genoa to protest the globalizing agendas of the most powerful nations as they gathered under the auspices of the WTO or the G7. At the same time, she can also be seen in her writing as clearly wrestling with what the relationships are between the different strands of her life, and the choice not to come out with *The Spiral Dance Reborn: Further Exercises in Spiritual Growth for the Wiccan in You!* should, I think, be read as an intentional rejection of a relatively easy and stale path forward. This choice almost certainly had economic implications for Starhawk as well: none of her later writings come close to the success of *The Spiral Dance*: in early 2011, *The Spiral Dance* ranked in the top 33,000 selling books on amazon.com, placing it well within the top one hundred in the more specific categories the giant online bookseller maintains (Religion & Spirituality/Earth-Based Religions/Witchcraft; Religion & Spirituality/Earth-Based Religions/Wicca; and Religion & Spirituality/Religious Studies/Comparative Religion). *Dreaming the Dark* sits just inside the top two hundred thousand, *Truth or Dare* over three hundred thousand places further down, and the most explicitly political and least magically instructive text of them all, *Webs of Power*, lies outside the top million best-selling books.

These different concerns come together again in 2004 with the publication of *The Earth Path: Grounding Your Spirit in the Rhythms of Nature*, a book that manages to combine the workbook-style so beloved by the self-help community with a deep political commitment, centered on creating, sustaining, and continually transforming what is seen as a deeply troubled relationship with the earth. There is a mix of practical advice on topics like creating an urban compost heap from some wire, three old tires, and a plank of wood

as well as a constant attempt to explore the webs that tie individual, local choices to global issues—*The Earth Path* is most certainly neither apolitical nor politically “soft” in a we-all-love-the-earth-so-let’s-recycle way. Indeed, Starhawk has, throughout her work, little use for such proclamations—consider this from *Twelve Wild Swans*:

The Witch’s law says, “Harm none, and do as you will.” This is a simple saying, but incredibly difficult to apply. Do I do harm by smashing the snail eggs in my garden, or do I do harm by *not* smashing them? If I let them live, they will kill my seedlings. So which is the harm? The Witch’s worldview comes with tremendous responsibility to weigh each action in the wisest possible view of the whole. There is no room here for simpleminded innocence: “I would never kill a living thing”; or “Don’t cut down trees.” If the trees are the weedy eucalyptuses that Europeans brought from Australia and that now threaten the few wild islands of California native plants and animals, maybe we need to work hard to cut them down. (Starhawk and Valentine 2000, 193)

The Earth Path does close a cycle opened in *The Spiral Dance* where, twenty years on, Starhawk is able to find a ground that supports her, both magically and politically; a space that, from her perspective, is able to hold marching in the streets, meditating on the goddess, planting nectarine trees, building yurts, and working in both magical and secular communities. In the intervening time, she has been hardened: she has watched protesters beaten to death in Italy, she has spent nights in jail herself, and she has maintained through it all a deep commitment to finding in neopaganism a container that supports both those experiences and what is needed for her to continue to speak and act in politically embodied ways.

I want to close the discussion of Starhawk specifically with a moment from *The Earth Path* that helps bring the contrast with the New Age into stark and personal relief. This story is told in a chapter entitled *Observation* whose focus is on how we see our own state of interaction with the world:

Magical discipline is about learning to hear, understand, and “speak” to our own inner states of consciousness as well as the outer world: the goal is to become aware of our current state of awareness and make conscious choices about what state we want to be in. And every form of personal change requires our active will and participation. (Starhawk 2004, 60)

Before a trip to Europe, Starhawk was hiking through the woods with some friends as part of a goodbye party, when she slipped on some loose gravel, breaking her ankle.

I spent the next week at home, recovering, waiting for the ankle to be ready for a cast, grumbling at my partner and housemates and occasionally tossing the odd piece of furniture around the house, while snapping viciously at the parade of well-meaning friends trying to assure me that this was the Goddess’s way of telling me to slow down. (Starhawk 2004, 59)

The behavior of these friends may be seen as the standard New Age response: all events contain a direct message focused on the individual, and are open to an easy interpretation.

I pointed out to them that if I had a boyfriend who thought I should slow down, and communicated that thought by breaking my ankle, they’d be the first ones urging me to get out of that abusive relationship and report him to the relevant authorities. I give the Goddess every opportunity to communicate with me on a daily basis, I assured them, and if she wanted me to slow down, all she had to do was say so and reduce the workload a bit, not break my ankle. (Starhawk 2004, 59)

Note the argument: communication channels with the deity are wide open for Starhawk, and she cleanly rejects the notion that a painfully coded message is necessary. Instead, nobody is particularly “at fault” for the broken ankle, despite a very powerful urge to interpret the event along those lines. Starhawk recognizes that, as she is in Europe in a wheelchair, she

could hear whispers of the stories that shaped my childhood—stories my mother told herself about being a victim, being abandoned, never being taken care of, always caring for others, and never getting enough herself. Stories I had internalized as well.

But I also became aware of something else. When I got caught in the stories, I felt abused and misused and unhappy. When I could stay out of those stories, being in a wheelchair with a broken ankle was just something new I was dealing with. It was interesting, actually—a different sort of trip than I had planned on or hoped

for, but a trip that showed me a whole new perspective on a world that I wouldn't otherwise have seen. I had a whole new relationship to sidewalks and curb cuts and bathrooms. I understood the need for laws protecting access for the disabled in a whole new, visceral way. I look back on it now as an extremely valuable experience. (Starhawk 2004, 59–60)

In one sense, her reaction is an argument directly against the New Age: the narcissistic reaction, the reaction that is fascinated with her own stories, with the trans-generational patterns at play from her family of origin, with all of the previous moments in her life where these feelings had emerged, must be set aside in order to open herself to whatever is contained in the current reality. Not only is direct experience given primacy over personal history, but that experience is immediately and forcefully expanded into a notion of community, into questions around how this same experience might be shared and felt on a practical level by others.

The notion of community is critical to understanding neopaganism. Neopagans consistently claim their spiritual practice generates intense and emotionally powerful connections that flow in unpredictable and highly fluid ways. Covens—the most central of the community structures—form and re-form, some having decades of unbroken history with a stable series of leaders, others dissolving either quietly or in a sudden conflagration of personalities. This much is, perhaps, to be expected but Starhawk's commitment to groups reaches far beyond the coven structure. Most notably, both as the network of offshoot covens from her original group grows exponentially over time and as she increasingly engages in various forms of direct political action, she writes more and more of “affinity networks,” a way of organizing groups that have overlapping—but by no means identical—goals in a productive structure that allows cooperative engagement.

Much of Starhawk's writings after *The Spiral Dance* are either explicitly focused on, or contain significant parts dedicated to the study of interaction patterns in groups, culminating in her most recent publication, *The Empowerment Manual: A Guide for Collaborative Groups* (2011). Much as *The Earth Path* calls on earlier magical writings, *The Empowerment Manual* pulls together the more practical and community organizing work of *Truth or Dare* into a form that is designed to be consumable by, if not a Fortune 500 board room, the open workspace of a Silicon Valley inspired, groovy start-up near you. Its topics—building communication and trust, meeting and process facilitation, leadership roles, conflict resolution—are decidedly secular, the focus of thousands of corporate improvement workshops, programs, and consultancies before her, but the content is reflective of her four decades of deep engagement in various organizations, grass-roots and otherwise, and her dedication to discovering new ways for people to support and collaborate with each other in those quotidian contexts. The movement from coven to conference room makes sense only if the deep commitment to community is fully recognized.

Natural Communities, Ecological Conclusions

This backward order of things—first you write and then you figure out what you are writing about—may seem odd, or even perverse, but it is, I think, at least most of the time, standard procedure in cultural anthropology.

Clifford Geertz, Preface to the 2000 Edition of *The Interpretation of Cultures*

Where, then, are we?

At the end of these five chapters, our course has wandered widely and through much varied terrain, tracing the arcs of several sets of loosely-related ideas, and pursuing them down not a few rabbit holes. But, to what end? If Muir and Næss are to be believed, the walk itself may prove a salve for the soul, but even they had destinations and struggled to make sense of what they saw along the way. Bearing this in mind, there are two observations with which I would like to close, one academic, one less so.

The first is an assertion about the nature of neopaganism in North America, really a claim that it is a neopaganism of nature. The waves of paganism that arrived on these shores from Europe were those of mystery cults, of rituals and rites with thousands of years of inherited history. This is the inheritance of Ficino, of Bruno, of Swedenborg, but it

is only part of the story. Those traditions broke against the rocks of the New World, fracturing into patterns that scattered both across the continent and back across the ocean by the end of the nineteenth century, adhering wherever they found sympathetic surfaces. The return to Europe is important: neopaganism is more similar than different on both sides of the Atlantic, and while the discrepancies show most starkly when the contemporary is seen through the lens of historical roots, a practitioner from New England is likely to feel comfortable in Old England as well.

These pools of acceptance were largely marked by the presence of a vitalism that was couched in terms of the natural world. Whether the roots of the vitalism were seen as internal or external—bodily or worldly—the mystery had moved outside, if perhaps, in Muir’s words again, “only to go back in.” This process has resulted in a set of neopaganisms recognizable as much for their insistence upon the primacy of a relationship with the natural world as for anything else.

This insight is not original—it builds both upon the general scholarship of Wouter Hanegraaff, but also upon an extension of the claims made by Steven J. Sutcliffe and Chas S. Clifton. But it is a nuance that is often overlooked both in neopagan accounts of their own development in America and in academic assessments of their history. The wide expanses of America, Muir’s glaciers and sequoias, were a critical component in their survival, especially in the face of the growing dominance of a scientific rationalism that threatened to eradicate all forms of mysticism in its wake.

The One and the Many or, But We Were Promised Hovercars

Any sufficiently advanced technology is indistinguishable from magic.

Arthur C. Clarke, *Profiles of the Future*

The final point I wish to make returns us to the metaphor of ecology, and to its broader meaning. One of the tensions running through this paper is between the individual and the community, whether seen as Muir's struggle to create a life that supported both his need for thousand mile walks and his commitment to a larger public good or as Margulis' work to disprove the notion of the individual—and its evolutionary equivalent, the selfish gene—in favor of the bacterial masses that live inside each of us or as Haraway's railing against the reification of the unusual individual by Deleuze and Guattari or as the difficulties encountered by the New Age in conquering the narcissism that seems to accompany it at every turn.

This tension is real, and it is one that can be viewed throughout human history in almost infinite variety. It has been, and will continue to be, evaluated in many different ways, with pronouncements at all points along the continuum it forms. But the notion of ecology demands an important transformation where, in photographic terms, the depth of field is radically expanded. What was originally a scene dominated by a few figures in the foreground, their outlines clearly delineated against the backdrop, flattens out into a landscape where it is no longer possible to isolate one figure from another with any certainty. Where does the river end and the delta begin? The delta and the sea?

Muir's gift was to let Emerson's invisible eye move through him without

refraction, allowing him to expand his view out towards the horizons instead of contracting back towards an anthropomorphically reduced suburbia. The radical nature of this move is precisely part of what has left it on the fringes of American thought: the notion that nature is not there for us, for the taking and the taming, remains fundamentally opposed to the continued expansionist triumphalism that has its roots in the colonial moment and its current tendrils in the sprawling freeway-side mall. These are static structures, dead and ultimately untenable precisely because they lack the vital principle, the constant chemical churn and change that Lovelock realized denotes the presence of life. We see this in abandoned lots quickly grown over with the first wave of hardy weeds, in the never-ending construction needed to maintain the concrete and steel arteries of transportation, in the staggering dependence of contemporary society on a surprisingly fragile network that enables the global flow of information and media.

Science itself, still hailed as the white knight of a conquering rationalism, is struggling to maintain its stability on two fronts. First, internally the sheer complexity of it all remains overwhelming. We have glimpses—often important glimpses—into how things “really are,” but the dream of a Grand Unified Theory (GUT), the holy grail of theoretical work in the 1970s and 1980s, has largely been abandoned or, at least, understood to be put off for future generations. Just as the bacteria inside each of us complicate the question of individuality and its relationship to the history of the species, the GUT of science is no longer filled with objects from the world of Newton, Descartes, and Hume, billiard balls of specific weights whose velocity and momentum allow precise, calculated results. Quantum uncertainty and genetic complexity rule in their stead and while this does little to

undermine the everyday utility of Newton's brilliance—the Mars rover Curiosity's current explorations of the dusty emptiness of the red planet attest to this—we are left understanding that such things may no longer be seen as wholly sufficient for understanding the world around and inside of us.

Second, the role of scientists themselves seems to be undergoing what is best seen as another turn of the spiral, a slow and often unwitting return to the recognition that expanding the realm of knowledge is work performed on the edge of the unknown and the unknowable, and walking the fine line between falsifiability and madness is neither easy nor likely to lead one in predictable directions. While the reaction of some—and these are the ones that drew Midgley's attention—is to reverse direction into either the self-aggrandizing realm of scientism or into flights of fancy that would make Muir proud, others are finding that science and complexity are necessary bedfellows, that what we know and what we aspire to know interact in surprising ways more reminiscent of Newton's fascination with alchemy—to which he devoted more of his life than physics—than to his volumes of mathematical formulae. Capra's physics remain suspect, but his recognition of the vital interactions of science and other forms of belief remain highly relevant. There is a mysticism in science and without its embrace, we are in all likelihood approaching the practical ends of what it can accomplish—in support of this I would offer Sagan's passionate claims to the power of the unknown, to the mysteries yet unsolved as he gazed into his oddly pronounced billions and billions of stars in the cosmos.

The close of the twentieth century has left us profoundly uncomfortable with our relationship with technology. We are dependent upon it, even addicted to its fruits, but we

are also deeply aware of its dangers despite many attempts to blind ourselves. We resist this discomfort in significant ways, from celebrating its various successes to the way we structure the boundaries of knowledge itself. As an example of this latter point, consider the demographics of those that contribute to the English language version of Wikipedia (by far the dominant, and the model used by other linguistically grouped contributors). It is trite to recognize that human history has never seen a more efficient gathering of data than Jimmy Wales and Larry Sanger's pet project, but it is equally important to note just how bereft Wikipedia remains of hermeneutic sophistication. This is data assimilated by the privileged for the privileged, and filtered through the fine mesh of an assumed rationalism, triumphant in its demands for proof and citations. Which is not to deny the intensely utilitarian value of the site, but knowledge without interpretive meaning remains a dangerous thing.

In the end, this is where technology has failed us. For all the spectacular, life-preserving and survival-enabling successes in medicine and infrastructure, for all the progress in the global quality of life that has been seen (and not for one instant losing sight of the distance yet to go), it is increasingly clear that turning to technology for our happiness leads us down a cul-de-sac of unmet expectations, lined with *Likes* and tweets, poorly lit photos and ubiquitous product placement. This realization has left us a bit bereft and can, I would claim, be seen as part of our current structuring of the notion of apocalypse as being an absence—explained or not—of the technological utopia that was assumed to be well on its way.

Culturally, we are obsessed with what comes after that event, from the long-

running television series *Lost* and Cormac McCarthy's *The Road* to S.M. Sterling's "Emberverse" books and the legally-questionably similar television show *Revolution* to the massive phenomenon of Suzanne Collins' *The Hunger Games* and their film adaptations to the televised version of Robert Kirkman's graphic novel, *The Walking Dead*. While simple climate change is a more likely cause than a sudden eruption of zombies or an inexplicable alteration in the laws of physics that prevents combustion from releasing sufficient energy to run an engine or fire a gun, each of these struggle with the question of how to reconcile the loss of the modern world with survival in dramatically changed circumstances.

However we evaluate the New Age, its successful transformation of the idea of apocalypse from something dependent on the unpredictable tendency of the world around us to intrude into our human routines in devastating ways to something that is held within each of us as a psychological structure that must be overcome to further human development remains a brilliant achievement with far-reaching implications. While enabled by its historical continuity with other parts of Albanese's American metaphysic, this change brought the demons inside to roost in our psyches. The problem is the world is still out there, and its destructive nature is still as capricious as ever. Gaia remains Margulis' "tough bitch," ultimately uncaring about any specific form of life in favor of the phenomenon writ large.

It is this largeness that I hope to have shed a little light on in this thesis, the notion that while a single species tends to be irrelevant to the larger story, communities of species—ecologies—remain the star of the show. We only exist in the plural, somewhere between the postmodern trope of "always already" and Margulis' bacterial colonies; we

only exist in conversation with others, other cultures and other traditions, other communities of behavior. This is the learning that neopaganism offers, that after we struggle with the complex issues of authenticity and agency that accompany the incorporation of others into ourselves, we are left with the possibility of plurality, with the intermingling of innumerable single organisms that is at the heart of evolution itself. This is the ultimate optimism that guides Starhawk from coven to meeting room, and that makes sense of the simultaneous appeals to the Goddess and the meeting agenda.

Once established, ecologies adapt. Individuals come and go, and the most any can do is leave a small mutation that is carried forward. But the community remains, and it is only seen through this wider lens that how any of it matters—from the microscopic to the planetary—can truly be seen.

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